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IRON AGE

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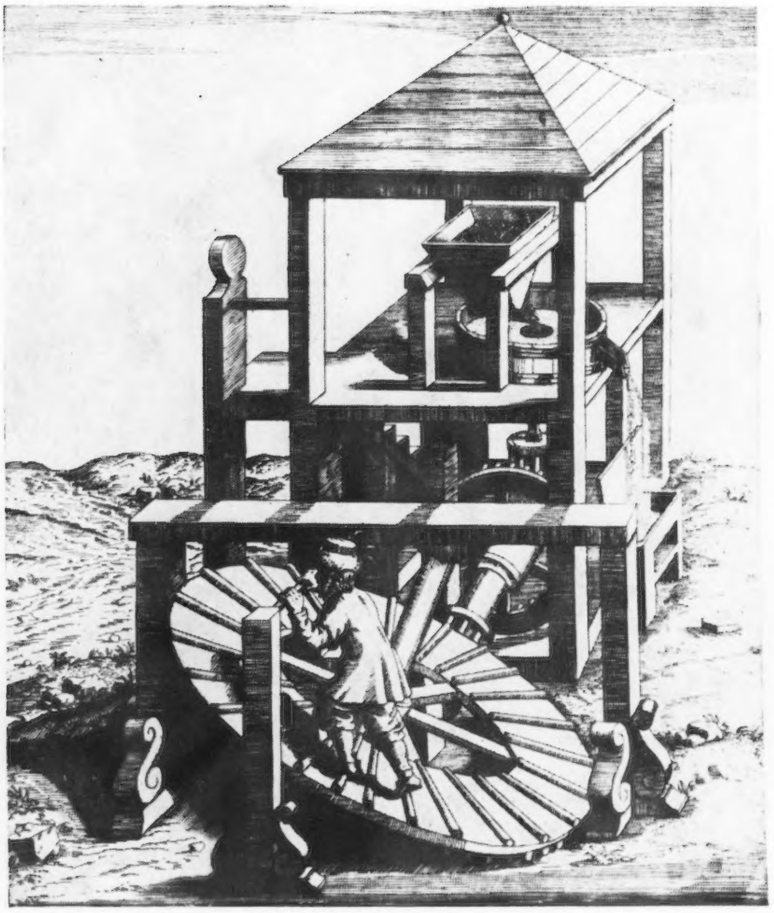
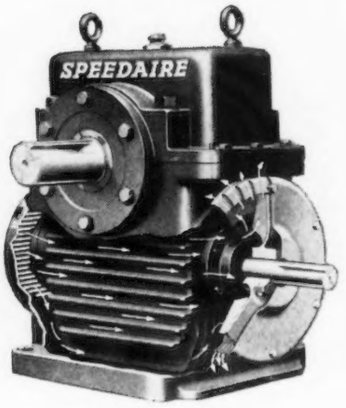


Treadmill operated by inclined plane. From a copper engraving, 1662.



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IRON AGE

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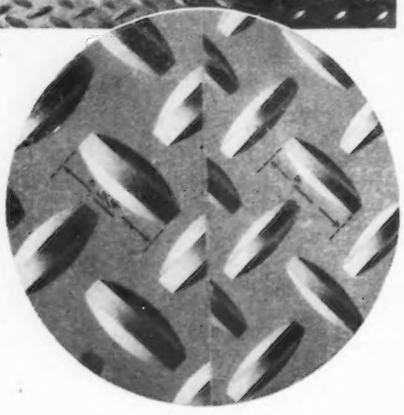

In stock at eleven Ryerson plants are the two pattern sizes shown at the right. Projections are 1 ¼" long on the large pattern and 1" long on the small. Other products in stock include: bars, structurals, plates, sheets, tubing, alloys, Allegheny Stainless, etc.

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This editorial, published in THE IRON AGE on July 26, 1945, is republished by request as being perhaps more timely today than when originally written.

Water and Other Pressures

ONCE upon a time there was a peaceful community situated on a plain adjacent to a mountain range from which it obtained its water supply. Abundant springs and rainfall in the mountains fed a stream which had been dammed and the water collected in the reservoir, thus forming a constant and plentiful supply of this vital liquid for all purposes. Indeed it was the sole supply for the community since the ground strata in the flatland did not permit of driven wells.

Naturally, the inhabitants took pains to keep the dam in good condition as well as to maintain the sanitary condition of the watershed. It was necessary to employ a number of people to do this work as well as to regulate the valves according to the head and season and the needs of those using the water. However, the number required to perform this service was but a minute fraction of the population served.

Sensing the power over the community presented by these circumstances, a clever but unscrupulous leader of this maintenance group decided to take advantage of it. So he persuaded his followers to band together to exact tribute.

A few rifles and ammunition for them were sufficient to make this mountain fastness impregnable, especially since the peaceful community had no means of dealing with such a situation. So when this small minority group shut off the water to enforce tribute, there was nothing else to do but comply.

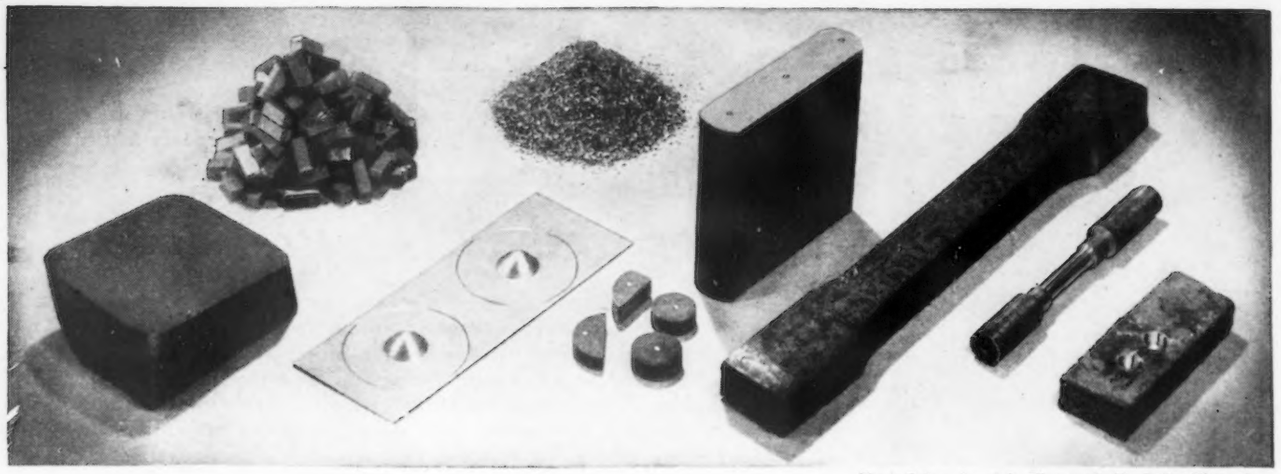
Of course this story is purely imaginary and one might well say such things could not happen in an era of civilization. Unfortunately they have happened and still happen, not to water but to another stream almost equally vital, namely, the stream of goods and services flowing to the consumers of our country.

Some of you will remember, perhaps, the cornering of the wheat market by unscrupulous speculators not so many years ago for the purpose of levying tribute upon those who ate bread. Or the more recent trade agreements and cartels created for the purpose of restricting markets and raising or maintaining prices. Or on the labor side, the ability of a teamster's union to exact its unearned price, and a heavy one, from every farmer driving his produce into the New York market. Or the successful attempt of a few hundred hoodlums and hoods to deprive millions of readers in a great city of their daily newspapers.

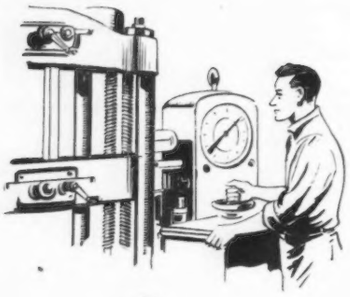
Strange, is it not, that we so willingly spend billions of dollars and a million lives to save the world abroad by eradicating Nazism and yet do practically nothing to clean out these stinking cesspools that foul our streams of commerce at home? For these minority pressures upon majorities are Nazism pure and simple. They are, on a smaller scale, exact replicas of the detested Hitler technique of "Do as I demand, or else!"

We believe, and should, in protecting minority rights, but we should not make the sad mistake of not distinguishing between defenseless minorities that need protection and vicious minorities from which the majority needs it.

Some day, I hope, our lawmakers will awaken to the fact that acts which impede the freest possible flow of the stream of goods and services to the public are harmful to general welfare—and do something about it.



Typical Samples of the Thousands Checked to Maintain Quality and Uniformity in Inland Steels



Hundreds of Tons of Samples are Tested Yearly

Making steel, the basic material of our modern world, is no simple process — nor is it one of small responsibility. For in making steel thousands of requirements must be satisfied, many involving consideration for human life as well as the reputation of designers, fabricators and builders of equipment. Operations of such consequence call for constant checks and rigid testing — ruling out all guesswork.

In the course of a single year hundreds of tons of steel samples undergo chemical, tensile, metallographic, etch and other tests at Inland. Chemical analyses alone run well over a thousand tons. These precautions are taken to furnish a uniformity and quality in steel that will fully measure up to every requirement.

For the benefit of steel users, Inland maintains a large specialized staff of engineers and metallurgists who will gladly cooperate with you in the selection and use of steels — without obligation.

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INLAND STEEL COMPANY

IRON AGE
Feb. 19, 1946

NEWS FRONT

► The problem of alloy scrap is no longer expected to trouble the industry because in the present shortage mills are willing to accept all the alloy scrap being offered, without premium payment except for 3 to 5 pct nickel steels. The shortage is expected to continue until alloy scrap is pretty well worked out.

► The well developed trend for industry to diversify its postwar markets by expanding into lines new to the manufacturer has apparently reached its peak in the automobile industry, on which everyone seems to have designs. Every week brings announcement of new entrants to the field, many of whom have had only indirect previous relationship to it.

► The 1946 Chrysler is expected to have improved acceleration made possible by reduced transmission gear ratios. Two driving speed ranges are provided, and a gear unlocking feature. Aluminum pistons will replace cast iron; plated piston rings are standard.

► Sperry Corp. will shortly close its big Lake Success plant at Great Neck, Long Island and concentrate all its manufacturing facilities at the Ford instrument plant at Long Island City. It is understood that UNO will take over the Lake Success plant.

► High-speed operation possible with spotwelding has made for its wide acceptance in recent years. New equipment makes possible the welding of two pieces of 0.040-in. aluminum alloy at 150 spots per min. An even more pronounced gain in speed is possible when welding stainless steel. Two pieces of 0.050-in. stainless can be welded at the rate of 400 spots per min.

These new machines eliminate all mechanical switches, solenoids and relays which formerly operated during the welding cycle. Recent machine design developments include high-speed electronic control units, electrode cooling units and machine leveling devices.

► Experiences with heat treating shell steel revealed the advantages of a fast quench. Rapid quenching has made it possible to use a lower specification steel. This facilitates rough machining in the as-forged condition and improved faster quenching has resulted in less free ferrite which permits a higher drawing temperature and better machinability for the heat treated shell.

► Radiographs of steel sections 12 in. thick can be made with an exposure time of only 2 hr and at a distance of 3 ft with the 2 million volt X ray equipment developed during the war.

Higher voltages increase the latitude of the radiograph by showing extremely fine gradations in density that represent variations in thickness. In addition, these units may be placed far from the specimens and a larger area sprayed with X rays as powerful as would otherwise emanate from lower voltage tubes.

► Statistical quality control as applied by inspection departments involves principally frequency distribution diagrams, correlation charts and control charts.

The first two are used largely for investigating the nature of the variation of a given dimension or characteristic of a part. Correlation charts analyze relationships of characteristics.

► Development of 32-in. and 33-in. diam ball-bearing races having a ball diameter of $\frac{3}{4}$ in. presented extraordinary problems in handling and heat treatment to avoid distortion.

These were solved by the use of pot chucks and plugs for each stage of machining and grinding. High-carbon chromium steel was used for the races and these were heat treated in special fixtures to keep them round and to size.

► Bombs carrying individual television sending equipment, and fully controllable after dropping, were perfected in the U.S. by war's end. Aircraft could watch the target via the bomb during its descent, and so alter the bomb's direction by radio to get a direct hit.

Any future atomic high-altitude rockets will undoubtedly have similar television (or radar) sending equipment so that flight can be altered to achieve desired hits.

Statistical Quality Control of

IN the past few years there has been considerable increase in the interest shown in the application of statistical methods for product characteristic investigations and for the control of quality during production. These new techniques possess valuable advantages over all former methods of inspection.

The statistical method, or at least that portion of the method which is of distinct interest to the inspection department, is extremely simple to understand and to use and involves no mathematics beyond ordinary arithmetic.

These methods have been used for several years in the spring department of the writer's company with very satisfactory results and are now being applied equally as well to the solution of production problems and for the control of quality in the stamping department. Through its use such things as faulty tool setting, defective material and improper tool design are readily brought to light. The changes made in the production process itself or in the tooling can be readily examined to determine whether intended improvements have been actually accomplished.

Putting it briefly, the principal advantage of the statistical method is simply in providing a technique which enables personnel to understand what they are doing. Continuous use of the method soon provides inspection and production personnel with a wealth of information enabling them to solve quality problems with increasing ease.

The three principal phases of the statistical method as used by the inspection department in connection with stamping problems are:

(1) Frequency distribution diagrams
(2) Correlation charts
(3) Control charts

The first two methods are used largely for investigating the nature of the variation of a given dimension or characteristic of a part. The control chart is used for the active control of such characteristics during production. The simplicity of these methods are best illustrated by the few following examples

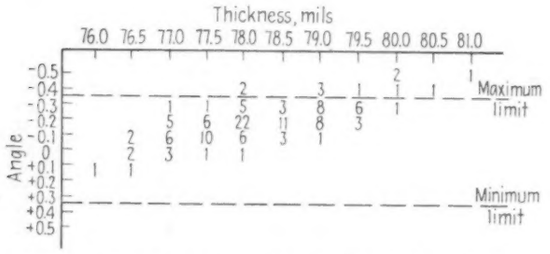

FIG. 1—Correlation chart showing the results of checking a number of stampings for accuracy of required angle and variations in metal thickness.

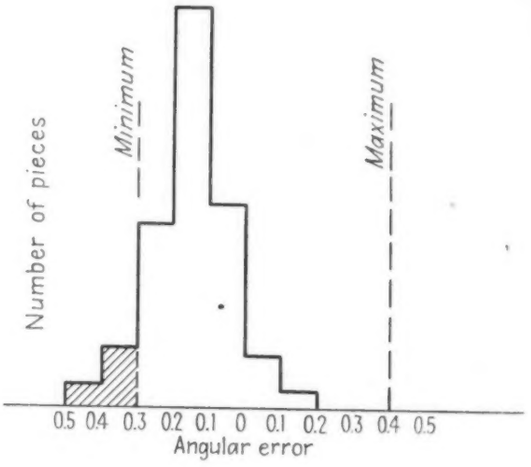

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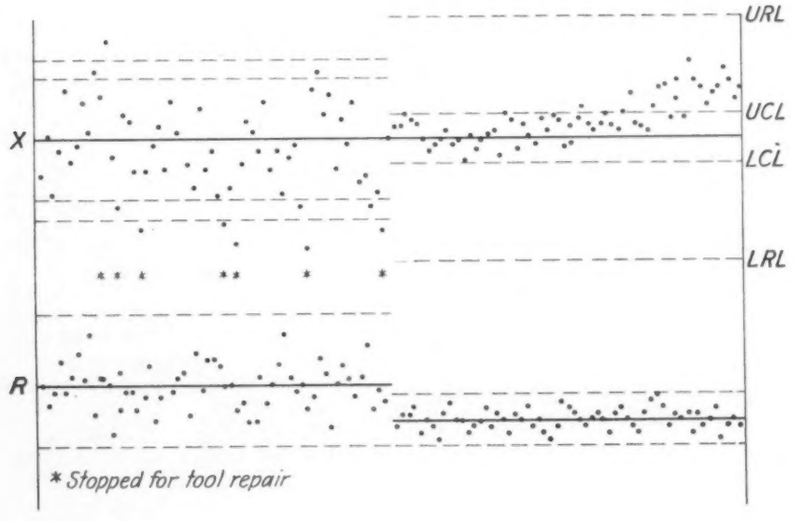
FIG. 2—The most common form of frequency-distribution chart in which a graphical representation is made of the actual number of pieces that fall into each measurement group.



LEFT

FIG. 3—Control chart indicating that specified tolerances were not being held. Right-hand side of chart indicates the improvement produced by redesigning the die.

Metal Stampings

By G. R. ARMSTRONG
Quality Control Analyst, Hunter Pressed Steel Co., Lansdale, Pa.

which have been extracted from a large number of cases.

Correlation charts are a most useful statistical method for analyzing relationships of characteristics. In the common correlation chart one functional characteristic is plotted on the X axis and a related, or supposedly related, characteristic on the Y axis. The items in question are examined one by one and the X and Y function measured and entered on the correlation chart. This procedure is continued until a well defined picture is obtained. The method is extremely simple and is well illustrated by the following example.

In the manufacture of a certain stamping the angle between two sides was required to be held to 90° plus or minus 1/3°. The factory reported that this angular tolerance could not be held, due to the variation in the thickness of the stock. In order to determine whether this claim was correct a number of stampings were checked for both angle and thickness and the results entered on a correlation chart, fig. 1.

These results showed that the tolerance on the angle could be held despite the variation in stock thickness. The results also showed that the initial adjustment of the die was not correct—causing the angle to be off in one direction. After adjustment of the die no further difficulty was encountered in holding the angle within tolerance. By the simple expedient of adding the numbers in this correlation chart so as to obtain the sums of each horizontal line, data for constructing the frequency diagram of fig. 2 was obtained. This frequency diagram assisted the inspection department in demonstrating to the tool setter that the die setting was off angle.

Frequency distribution diagrams are graphical presentations of the values obtained by measurement of a number of items chosen at random from a given lot. The procedure involves merely splitting the measurements into groups and determining the number of pieces falling into each group. Figs 2 and 4 are examples of such frequency distributions. Fig. 2 shows the data in its most common form, i.e., the actual data. In fig. 4, on the other hand, are smooth curves computed from the original data.

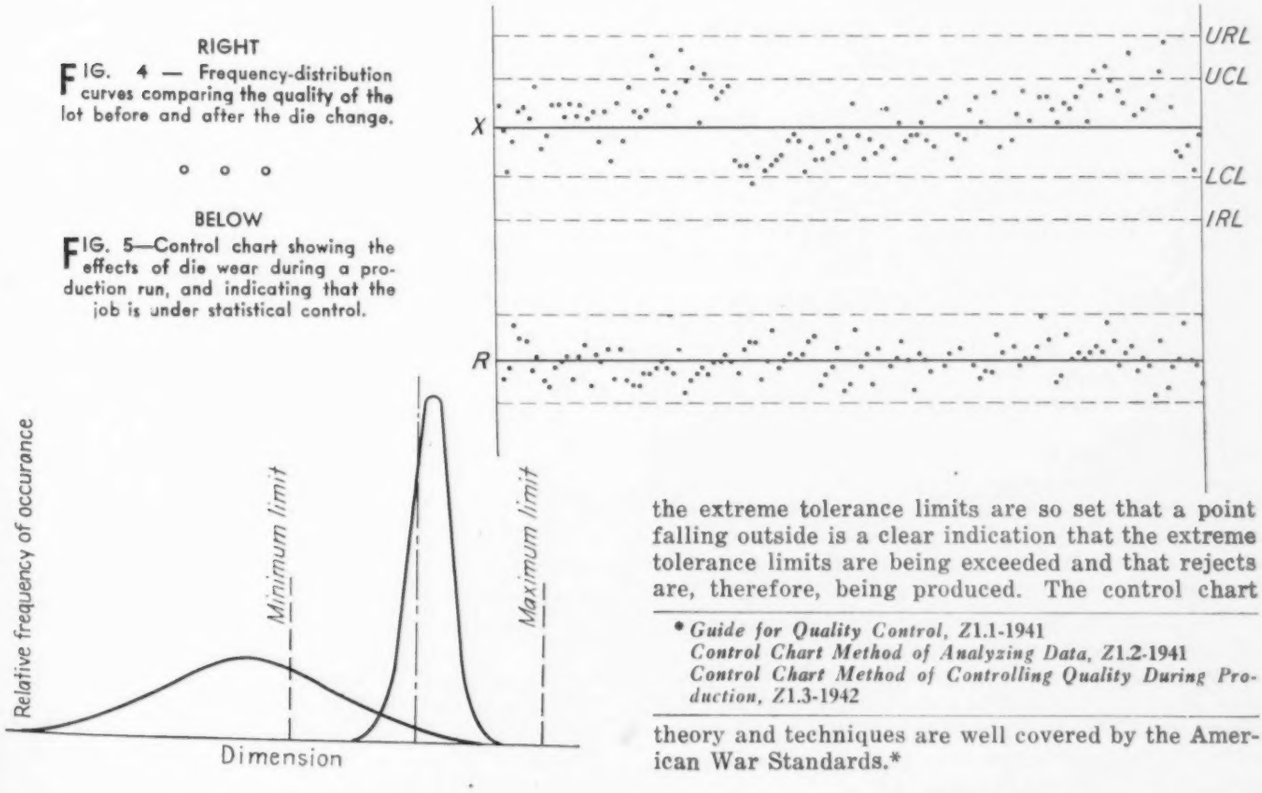
Control charts are a graphical record of quality. The control limits placed on these charts are of assistance in judging the significance of the variations of the quality of the product around the mean level. They are so placed that a plotted point falling outside of them during manufacture may be taken as an indication of a cause of variation that is worth investigation. The reject limits which are related to the extreme tolerance limits are so set that a point falling outside is a clear indication that the extreme tolerance limits are being exceeded and that rejects are, therefore, being produced. The control chart theory and techniques are well covered by the American War Standards.*

RIGHT

FIG. 4 — Frequency-distribution curves comparing the quality of the lot before and after the die change.

BELOW

FIG. 5—Control chart showing the effects of die wear during a production run, and indicating that the job is under statistical control.



* *Guide for Quality Control*, Z1.1-1941
Control Chart Method of Analyzing Data, Z1.2-1941
Control Chart Method of Controlling Quality During Production, Z1.3-1942

In the manufacture of a certain stamping the outside edge, which serves as a cam surface, is held to precise dimensions by two shaving operations after which three holes are pierced. The location of one of these holes, with regard to the shaved cam edge, is specified to very narrow limits. The piercing die employed a conventional nest. Despite every effort to accurately position the piece the control chart, fig. 3, showed that specified tolerances were not being held and it was, therefore, necessary to subject the piece to 100-pct inspection.

In order to obtain the maximum yield from this detailing operation it was necessary to make frequent die repairs and adjustments. After operation for some time on this basis it was decided to rebuild the die using an entirely different type of nest. The improvement which was obtained was very substantial as revealed by the second portion of the control chart. It is to be noted that 100-pct inspection was eliminated and that die repairs and adjustments fell off sharply. The frequency distribution curves of fig. 4 compare the quality of the lot before and after this die change was made.

Fig. 5 shows a production run on a stamping in which the wear of the die caused the X value (average value of a sample of five pieces) to increase during the production run. This "drift" or "trend" is of no particular concern until the average values begin to fall above the control limit and to approach the reject limit. At this point in the manufacturing process the job is shut down and the tools reground or adjusted until the X values are down near the lower control limit. Since tool wear is gradual the X values should plot in a band of approximately the same width as the distance between the upper and lower control limits. Such a condition definitely indicates the job is under statistical control despite the fact that the X value is progressively increasing.

By shutting down the machine when parts are still inside the reject limits the following results are assured:

(1) Maximum length of production run.

(2) Elimination of unnecessary tool grinding or machine adjustments.

(3) Advance indication when tools must be reset in order to avoid production of out of tolerance parts.

German Iron And Nickel Powders

At the Oppau Works of I. G. Farben high-grade nickel and iron powders were made by the carbonyl process. Herein is a report made by the Combined Intelligence Objectives Subcommittee on the manufacturing procedures used at this plant.

By T. P. COLCLOUGH
British Ministry of Supply

REPORTING on the Oppau Works of I. G. Farbenindustrie at Ludwigshafen, the Combined Intelligence Objectives Subcommittee found the plant was devoted to the manufacture of iron and metal powders by the carbonyl process. Nickel matte was the principal raw material used in the preparation of nickel carbonyl powders. Normally this matte contained 40 to 45 pct nickel, 45 to 50 pct copper and 8 to 10 pct sulphur. Before the war this was imported from Canada and at the outbreak of the war, stocks held were equivalent to about a 2½-yr supply. During the war, supplies had been received from France and Norway and during 1943-44 between 6000 and 8000 tons came from Petsamo.

The nickel matte was unloaded into storage, crushed as required to a maximum of 10 mm diam and transferred to the nickel house. The crushed matte was charged into high-pressure cylindrical reaction chambers, about 26¼ ft high and 19½ in. in diam, with apertures 4.7 in. in diam top and bottom. They were constructed of creep-resisting steel, containing about 0.5 pct each of chromium, tungsten and molybdenum with a corrugated inner surface. These reaction chambers were constructed and operated in groups of four, with a combined capacity of 21 to 23 tons of matte per group.

The chambers were heated to a temperature of 482° to 500°F and carbon-monoxide gas, preheated by superheated steam and electric heaters, passed through at a pressure of 200 atmospheres for about four days. Under these conditions, the CO gas combined with about 85 pct of the nickel, and some iron, to form nickel carbonyl, $Ni(CO)_4$ and iron carbonyl. Nickel carbonyl is volatile and therefore the impurities were left as a residue in the chambers.

The issuing gases were passed through copper gauze and flannel filters to extract dust and were then cooled to condense the carbonyl, nickel carbonyl having a boiling point of 109.4°F. The liquid nickel carbonyl passed through a pressure-reducing trap

under a CO atmosphere at 2 to 5 atmospheres pressure to prevent volatilization, and collected in tanks. The CO gas was then recirculated.

To prepare nickel metal of high purity, the crude carbonyl was subjected to redistillation to separate the nickel carbonyl from other carbonyls, mainly iron. Nickel carbonyl has a boiling point of 109.4°F contrasted with iron carbonyl with a boiling point of 217.4°F. Fractionation was, therefore, conducted at a maximum temperature of 158° to 176°F under a pressure of 0.4 to 0.5 atmospheres. This yielded a nickel carbonyl of high purity.

The pure nickel carbonyl was then passed to the decomposition process which was carried out in 11 chambers or cylinders. The liquid carbonyl passed slowly from a reservoir into a vaporizing cylinder where it was heated by steam coils within the liquid. The vapor then passed into a cylindrical chamber at a temperature of 428° to 464°F under a pressure of 7.9 to 15.7 in., water gage, over atmospheric. The $Ni(CO)_4$ decomposed into nickel and liberated CO gas which was recirculated.

The character of the powder was found dependent upon the speed of operation. With a slow rate of production of 660 to 880 lb a week, the powder was of a very heavy type and was extracted by a Beth filter bag system. The normal light nickel powder was produced with an operation rate of 2865 to 3300 lb per day per unit. The maximum rate of operation was given as 3750 lb per day but under such conditions the operation was dangerous and the nickel was deposited in the form of light filaments or wool which could not be extracted. With 11 decomposition chambers in operation, the production was given at about 350 tons of nickel a month with a record production of 425 tons.

Iron Carbonyl Powders

Iron powders manufactured at this plant were started from steel scrap and spent iron pyrites from the Sulphuric Acid Plant I. G. which were melted in a 4-ton rotary furnace of a modified Brackelsburg type, patented by a Dr. Thomas, and capable of both rotation and end tilting. This furnace was heated by improved water gas to the operating temperature then maintained in operation by pulverized coal. When the charge was completely liquified, the furnace was tilted and the metal ran into a shallow bed of sand to form layers of metal from 1 to 2 in. thick. This metal was described as eisenstein and contained about 92 pct Fe and 8 pct S. Capacity of the furnace was said to be 15 to 18 tons per 24 hr.

An alternative raw material was eisenschwamm, reduced iron, which was imported from Sweden in the form of circular disks about 8 in. in diam and 2 in. thick. This was kept as a standby for occasions when eisenstein was not available.

The eisenstein was broken into pieces easily handled and then crushed in a breaker to a maximum of 10 mm. The broken metal was charged into reaction cylinders, practically duplicates of the nickel chambers, and subjected to the action of CO gas at a temperature of 392° to 428°F under a pressure of 70 to 200 atmospheres for four or five days. As in the case of nickel manufacture, the chambers were operated in groups of four and each group had a capacity of about 18 tons of metal. In four to five days approximately 70 pct of the iron in the eisenstein was converted into iron carbonyl, $Fe(CO)_5$, and the residue was remelted in the rotary furnace with more steel scrap. The gas that issued from the reaction chambers was cooled to condense the iron carbonyl, and the liquid carbonyl was trapped and collected in the same manner as the nickel carbonyl.

The liquid iron carbonyl was transferred to the decomposition house, and distributed from a central holder into vaporizing cylinders where it was heated by steam coils and the vapor passed into the decomposition cylinders. These cylinders were about 10 ft high by 3 ft diam and were operated at a temperature of 464°F under normal pressure. The cylinders were heated by means of Kraft gas, which is producer gas made from brown coal and has a caloric value of 45 to 50 cal per cu ft.

Iron carbonyl, having a boiling point of 217.4°F, on decomposing precipitates the iron as powder and the liberated CO was recirculated. The iron powder so formed contained carbon varying from 0.6 to 1.2 pct as an impurity resulting from the decomposition of the CO gas by the finely divided iron. To minimize this decomposition of the CO gas, a small quantity of dry NH_3 gas was introduced into the decomposition cylinders and the deposition of carbon was limited to the small amount mentioned previously.

Capacity was stated to be 795 to 880 lb per day per unit, or with eight units in operation 2.8 tons a day or roughly 20 tons a week.

The decomposition cylinders were cone-shaped at the lower end and the iron powder collected in a cylindrical chamber fitted with sealing valves above and below. It was then collected in drums by way of a collapsible rubber sleeve. The crude iron powder was then heated in gluehofens in a hydrogen atmosphere at a temperature of 572° to 932°F in the presence of a small quantity of water vapor to remove any CO gas or iron oxide still remaining in the powder and also to reduce the carbon content. The gas content of the iron powder after this treatment was said to be not more than 0.1 pct of hydrogen and nitrogen. These ovens were horizontal steel chambers 10 to 13.5 ft long by 5 ft wide and about 10 in. deep and were heated by electric resistance coils. The iron powder is then crushed in a ball mill, screened and packed for shipment.

The metal powders made by the carbonyl process are in an extremely fine state of division, the particles having a diameter of 2 to 10 micron. The particles of iron are, in general, roughly spherical, but those of nickel are generally acicular. The size of the particle is governed by the conditions in the decomposition cylinder. The high operating temperature accelerates decomposition of the carbonyl and tends toward a lighter powder; on the other hand a greater height of the decomposition cylinder, giving a longer distance of travel for the particle in falling to the bottom, tends to produce larger particles by decomposition of more metal during the course of travel.

The packing density of nickel powder was said to be 26.5 oz per qt with a normal 66.5 to 99.8 oz per qt. The packing density of iron powder was given as 99.8 to 133 oz per qt.

Importance of a Proper Quench

By JAMES McELGIN
Manager, Metalworking Research
E. F. Houghton & Co.

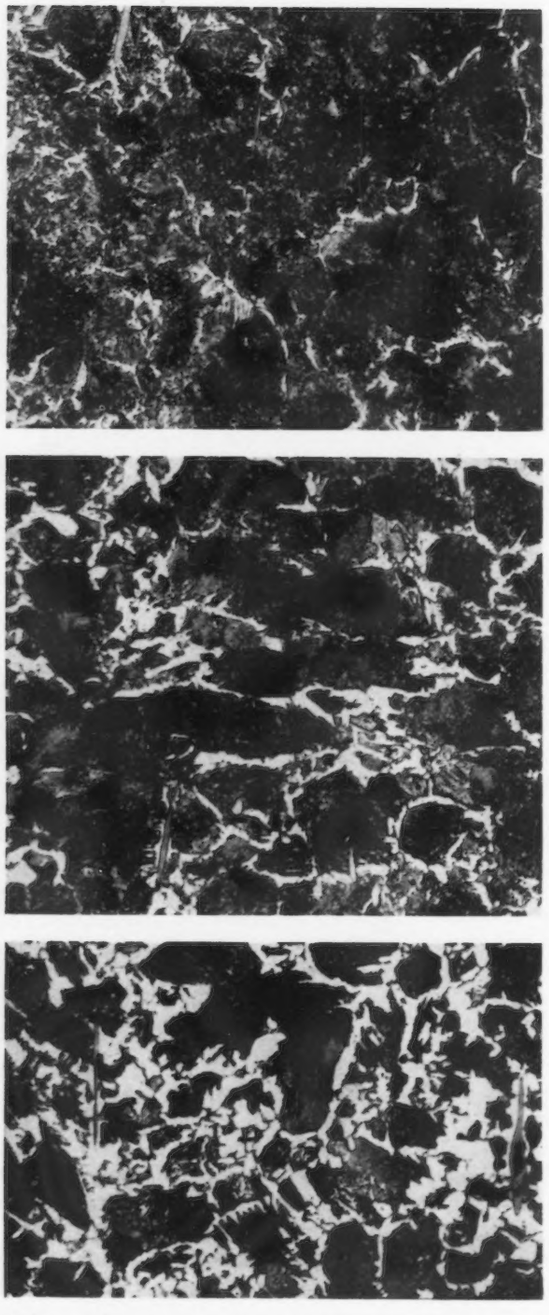


FIG. 1—Photomicrographs at X 500, nital etch, showing (top) structure near outside of shell Bhn 4.05; (middle) structure at core Bhn 4.15; and (bottom) structure near inside Bhn 4.30. Note the increasing amounts of ferrite (white constituent) from OD to ID and a corresponding decrease in hardness.

ALTHOUGH the war production effort has ended, the lessons learned in heat treating steel—shell steel, in this instance—will have their effect on future production of a more peaceable nature. Facts released regarding the manufacture of 105 mm H. E. shells at the Chevrolet Ordnance Plant, St. Louis, reveal a number of interesting developments.

Not the least of these was the importance of a fast quench on the 0.55-carbon steel (WDS-S-6) used. By obtaining a more rapid speed of quenching, it was possible at that plant to use a lower specification steel. This lower hardness steel facilitated rough machining in the as-forged condition, and the improved, faster quenching resulted in less free ferrite, which in turn permitted a higher drawing temperature, and gave better machineability to the heat-treated shell.

In conjunction with proper furnace adjustment, to be described later, a quenching oil was procured which had been specially treated to have a fast speed of cooling through the critical zone, in order to assure the maximum physical properties obtainable from low hardenability heats. Such factors as wetting-out, distillation range and stability were also considered in the choice of the quenching oil.

Wetting agents in a quenching oil lower the surface tension between the oil and the work. Thus the vapor stage of quenching is minimized and the evolution of gas bubbles greatly reduced.

Stability of the oil is essential. Light volatile fractions are objectionable because they lead to nonuniformity, and result eventually in sludging and clogging of the cooling system.

A further factor important in quenching is agitation. As is generally known, jets of oil are sprayed inside the shell cavity as the shell enters the bath, but this is not always as efficient as could be desired. For example, one run of shells showed a yield strength of only 62,500 psi, as against the 65,000 psi required, and a careful investigation was started to determine the reason for this. Analysis of the steel showed C = 0.50, Mn = 0.83, P = 0.026, S = 0.034, Si = 0.26, N = 0.05, Cr = 0.01, and it is noticeable that all the alloying elements were on the low side. The heat treatment consisted of heating to 1600°F in a walking-beam furnace, the shell being in the furnace 36 min and actually attaining a maximum of only 1450°F. It was then automatically conveyed to the oil quench tank in which it remained for 19 min, before passing to the draw furnace maintained at 1150° to 1250°F depending on the hardenability of the heat.

A cross-section of the shell at the band seat showed a large variation in hardness from OD to ID, ranging from 241 Bhn on the outside to 197 Bhn on the inside. The structure at the OD consisted of sorbite with small amounts of ferrite, but as may be seen in fig. 1, the refinement at the ID was very poor, the amount of free ferrite increasing with the distance from the OD.

It was obvious that there was an inadequate quench on the inside, resulting in poor refinement and consequently too low a yield strength. Changes were therefore made in the oil system to assure full flow of the oil and careful direction of the oil jets. Thorough agitation was provided, and the oil was forced into the cavities under pressure. After this had been done, the previously mentioned batch of shells was re-heat treated, and the hardness found to be much more uniform, with as good refinement at the ID as at the OD.

Temperature of the oil was not judged a vital factor in the Chevrolet installation, provided it was held between 120° and 150°F. Results anywhere in that range were very comparable. The system was so controlled that when the oil temperature rose above 120°F the agitation fans were automatically turned on.

At 150°F the evaporative cooler began to operate. Pumps with a capacity of 500 gpm were located on the main system. Should the oil temperature reach 175°F the whole conveyor system stopped automatically, so there could be no further quenching until the oil became cooler.

This installation was the largest of its kind in the country, including 14 complete production heat-treatment lines over 100 ft long, each handling six rows of shells on a 2.4 min cycle. More than 72,000 lb of steel were quenched per hr, each quenching tank holding 10,200 gal of Houghto-Quench oil.

This description being restricted to the heat treating of the shells, the adjustment of furnaces to minimize scale should be mentioned. Gas pressure was reduced so that the burners were fully on about 95 pct of the time, instead of 50 pct as originally planned. Orsat analysis revealed much less free oxygen in the furnace when burners were on. Burners were also adjusted to burn a small amount of gas in the "off" position. This produced a positive pressure in the furnace and prevented the infiltration of oxygen during that period. Further, the cycle was shortened so that the shells reached only a temperature of 1450°F, just above the upper critical temperature, although the furnace was set at 1600°F. Prior to these adjustments scale had been heavy, and had a tendency to fall off in spots during quenching, resulting in non-uniform hardness.

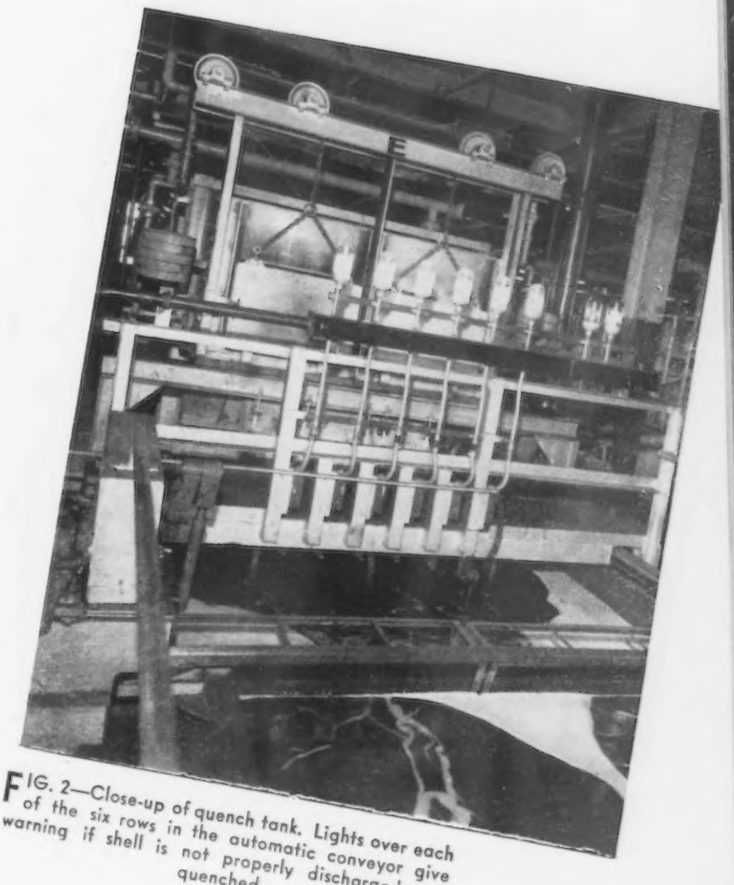


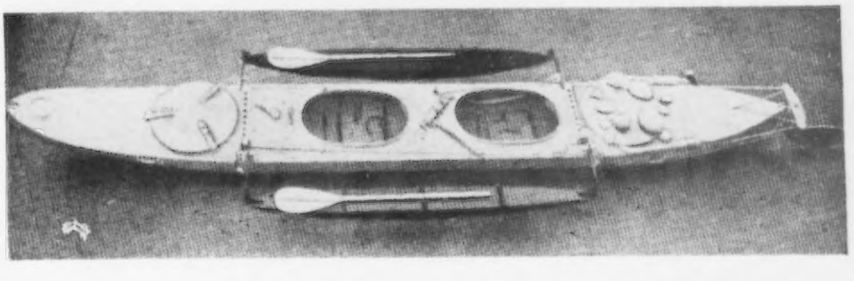
FIG. 2—Close-up of quench tank. Lights over each of the six rows in the automatic conveyor give warning if shell is not properly discharged and quenched.

Thus it may be seen how important the quenching operation becomes, from the standpoint of choice of steel, machinability and physical properties. Quenching can affect the entire manufacturing operation, in peace or in war.

LIGHT METAL CANOE

THIS British light metal power canoe was originally designed to meet war conditions. Principal material is Birmabright, an aluminum-magnesium alloy which combines high mechanical strength with a weight one-third that of steel and an exceptionally high resistance to sea water corrosion. Where fittings call for additional strength stainless steel is used. Overall length is 18 ft and beam is 2 ft 1.5 in. Weight complete with all gear, oil and fuel is 270 lb. Both bow and stern section skins, together with catamaran skins are 20 gage Birmabright sheet, each being fabricated in two halves with a central welded seam.

The center section skin is 22 gage and is of one piece.



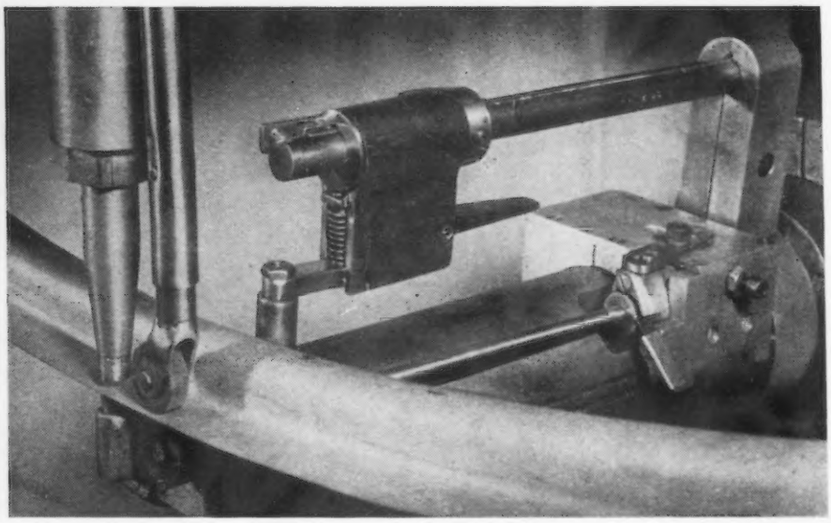


FIG. 1—An edge gage and indexing device are essential for the production of good work at speed in excess of 120 spots per min.

High-Speed

By BERNARD GROSS
Rohr Aircraft Corp.

THERE are many reasons why the designer, the fabricator, and the consumer benefit when spotwelding is selected as the method of joining metals. These include the elimination of labor, drills, and rivets, lower costs, increased speed of production, the reduction of weight, and the obtaining of smooth aerodynamic surfaces. In some cases, it is possible to spotweld joints on both sides of a blind area by the use of a copper mandrel where it would be impractical to effect joining by rivets. The fact that the strength of the spotweld is directly proportional to the remaining area, after the spotweld has been cut, has proved to be very useful in fabrication. It is, therefore, possible to join two metals and then cut through the weld. Spotwelds may be located close to each other and made to overlap without detracting from the strength of each weld. Obviously, rivets do not afford such advantages.

Of these reasons, and many more which could be discussed, the high-speed possibilities of spotwelding is probably the most important feature. The increased speed capacity of a spotwelding machine means that fewer machines, less operating and maintenance labor, less utility installations, and less space for a given job are needed. Added to these items is the fact that a particular part in process will be tied up for a relatively small amount of time in any one machine. Several years ago the speed of 20 or 30 spots per min for two pieces of 0.040 in. aluminum alloy was considered high. It is now possible to weld this thickness of material at 150 spots per min. An even more pronounced gain in speed is possible when welding stainless steel. Where speeds of 40 to 80 spots per min. were common five or six years ago, it is now possible to weld two pieces of 0.050 in., for example, at 400 spots per min.

Six or seven years ago, the welding machines which were used to fabricate stainless steel and aluminum alloys were different in many respects from those now in use. Most of the aluminum welding machines of today are of the storage type, which deliver direct current of short duration as compared to the alternate-current machines which deliver alternating currents of comparatively long duration during the weld. Two noteworthy advantages of storage welders are the lower line current demands and the minimum distortion of parts during welding. In the older machines there was a multiplicity of switches, which must operate during each cycle of welding, and a single air pressure system for the electrodes. On the machines discussed in this article, all mechanical switches, solenoids, and relays which formerly operated during the welding cycle have been eliminated. This has been accomplished by modern electronic control design and the use of an efficient and novel sequence unit, composed of an electric tachometer, an electric motor, a simplified clutch, a rotary hydraulic valve, and a magnetic reverse polarity disk switch. It has been found that electrode arcing, due to incomplete unsaturation of the welding transformer during high speed welding, has been eliminated satisfactorily when the reverse polarity device is used. This is accomplished by mounting an iron slug on the periphery of the firing disk. When the disk is rotated, this insert passes through two coils alternately without making any mechanical contacts. This actuates the firing of the electrodes with direct

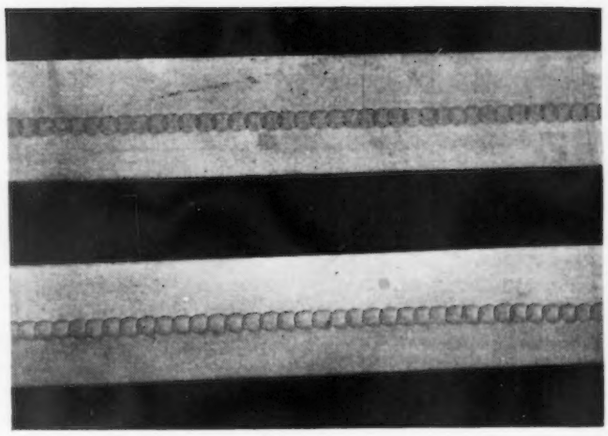


FIG. 2—At speeds of between 300 and 400 spots per min, these regularly spaced, overlapping welds were produced on stainless steel by the use of an edge gage and indexer.

Spotwelding

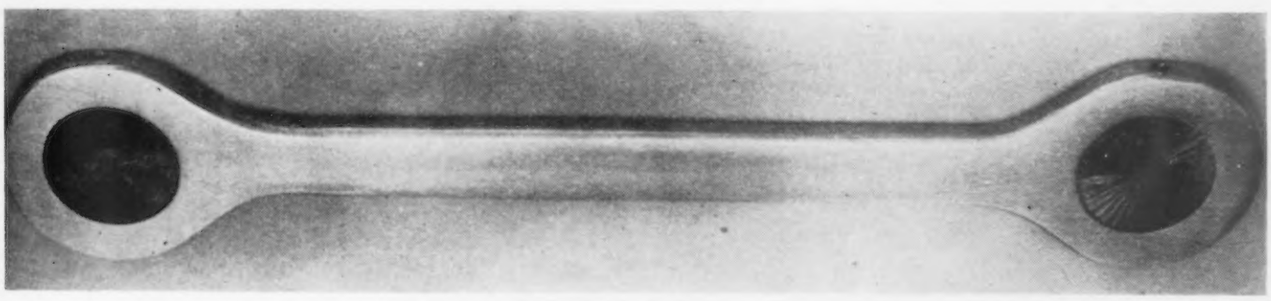
Spotwelding has found wide acceptance during recent years, and the possibility of its application to high-speed operation is one of its most important features. In this article the author discusses some of the factors which must receive careful attention to assure successful high-speed production, including machine design, tooling, set-up, maintenance, and personnel training.

current, first in one direction and then in the other.

There are many other machine design considerations which have been developed though laboratory research and studies made during production. Included in these are welding transformers which do not require cooling and a turns-ratio switch which can be easily operated from the front of the machine by the operator, if it is desirable to use a gun-welder attachment for tacking purposes prior to the normal machine welding. Also included in recent machine-design developments are high-speed electronic control units, electrode cooling units, and machine leveling devices, all of which can be integrally built into the welder.

The use of a hydraulic system to obtain a single or multiple-pressure system has been found desirable. Single-pressure welding of aluminum alloys of two pieces of 0.040 in. or less is satisfactory. The ascending and descending slopes of the electrode pressure curve and the positive and consistent pressure forces obtained from the hydraulic system cannot be duplicated when air is used. The hydraulic system makes possible more pressure dwell time per cycle than when air is used. This fact becomes more significant as the welding speeds become higher.

Along with the improved machine design of high-speed welders, the design of spotweld tooling must be taken into consideration. To maintain high rates of production, there must be a minimum of time when the machine is not in operation due to dressing or the changing of electrodes. Electrode dressing is necessary to renew the shape of the tip contour which may change as a result of impact electrode pressure and to electrode pickup of metals being welded. The elimination, by reverse polarity welding, of metal pickup due to arcing has already been noted. In the case of aluminum alloys, electrode pickup due to phenomena other than arcing, results when the electrodes become hot. Therefore, everything possible must be done to produce conditions which will insure the highest possible rate of heat transfer. A practical balance of the coolant temperature, the coolant pressure, the resultant coolant velocity at the inner tip electrode surface, and the maximum electrode tip thickness will insure



ABOVE

FIG. 3—Special tool for dressing electrodes. Coarse and fine cutters are mounted at either end of the holder and are shaped to the electrode contour.

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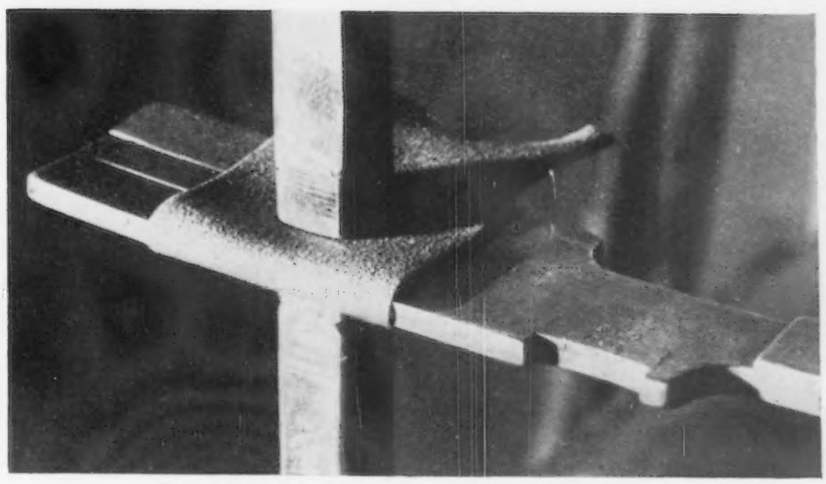
FIG. 4—Fine dressing of the electrode by means of a tool which has the desired contours on its upper and lower faces, and is wrapped with abrasive paper.



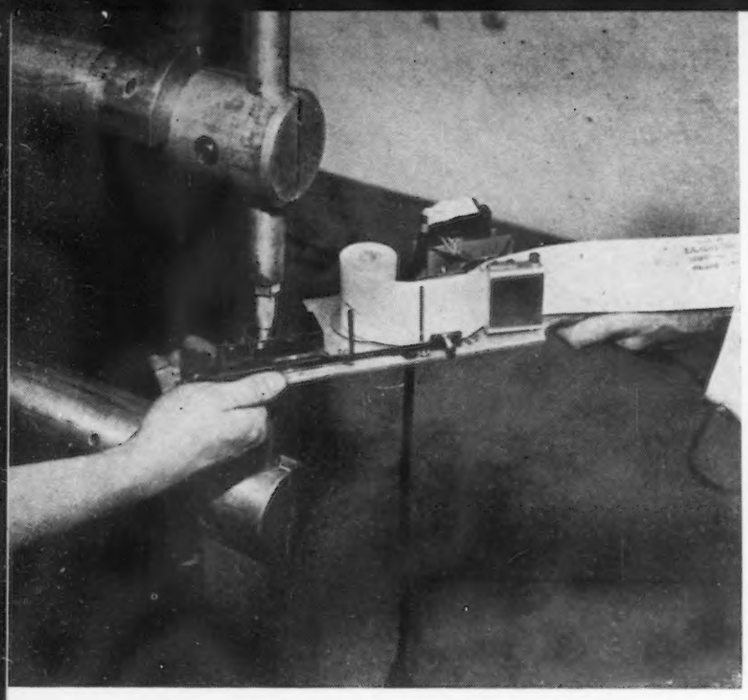


FIG. 5—By means of this portable electrical unit, electrode operation in respect to pressure and time of firing at actual welding speeds can be recorded on a chart.

practical heat transfer values. As an example, production studies have shown the following set of conditions to yield desirable heat transfer values.

Maximum thickness of electrode tip.....5/16 in.
Coolant pressure at inlet of electrode holder .....50 p s i.
I D of cooling tube, which is close to the inner electrode tip surface.....0.175 in.
Coolant temperature .....35° F ± 2° F
Minimum coolant flow.....1.2 g p m per electrode

Discussing the balance of heat-transfer factors, the equation $dq/dA = h\triangle$ should be considered, where q is the rate of heat transfer and A is the interfacial area of the inner electrode tip surface and h is the surface (or film) coefficient of heat transfer adjacent to the inner electrode tip surface; $\triangle$ is the differential of temperatures between the coolant and the electrode tip inner surface. In the example given, it may be noted that 35°F was the temperature used, which indicates that water is suitable. $\triangle$ may be increased, if lower temperatures are used, but a suitable liquid must be employed which does not freeze at temperatures below 32°F. However, increasing has little practical significance if the value of h is low. Since water is a convenient coolant to use, q can be kept sufficiently high when 35°F at 50 lb water pressure with the volume delivery noted is maintained and the value of h may be made to approach 1 by having sufficient velocity to wipe the vapor film across the inner electrode tip surface. Thus, satisfactory heat transfer can be obtained by using water above the freezing temperature as a coolant, providing sufficient coolant velocity is delivered at the inner electrode surface. The 5/16-in. maximum dimension for the tip thickness insures sufficient delivery of heat to A from the tip welding surface, when the common spotwelding electrode alloys are used.

Edge gaging of parts being welded, and indexing at high speeds are essential. A versatile edge gage and indexer has been developed which permits normal spacings or over-lap spotwelding, often known as seam welding, at high speeds. Fig. 1 shows materials being passed through the indexing rolls just prior to being welded by the electrodes. One of the rolls is driven by a mechanism which receives its driving force from the magnetic impulse around one of the horns, at the time the current passes through it for welding. When high-speed spotwelding is used, it is obvious that the operator can not weld without the assistance of such devices. Even on flat work, most skilled operators can not locate welds accurately at speeds over 100 or 120 spots per min. The edge gage shown in fig. 1 can be easily adjusted in relation to the distance from the electrode. The gage can also be rotated out of the way, if necessary, when tip dressing is performed. Fig. 2 shows an example of close and overlap spotwelding when the edge gage and indexer were used at speeds between 300 and 400 spots per min. Both of these devices can be used for a variety of welding such as flat welding, tube welding, etc.

It is generally recognized that contour control of electrodes is very important because the pressure per unit area of electrode will vary if the contour changes. Fig. 3 shows a successfully used dressing tool which has incorporated in its design two cir-

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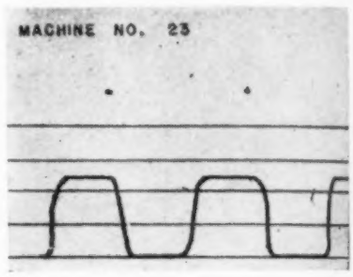
FIG. 6 — Chart produced by the instrument shown in fig 5, showing electrode pressure, duration of dwell, and location of firing in respect to the pressure curve.



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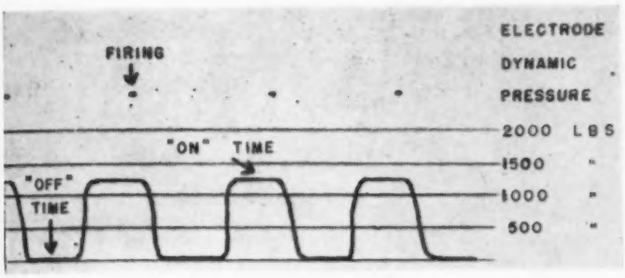
cular disk cutters, one coarse and one fine. For certain types of welding of aluminum alloys, it is sometimes desirable to obtain a fine finish on the electrode tip surfaces. When such is the case, the electrode tip dressing is followed by a sanding operation. This is accomplished by using a tool as illustrated in fig. 4. This tool has the upper and lower electrode contour shaped into its two outside surfaces, respectively. In the case of aluminum alloys, 120 or 150-grit oxide paper is wrapped around the two outside surfaces of the tool which is placed between the electrodes under light pressure, and rotated several times. The function of the cutters is to remove aluminum pickup and renew the shape of the electrode tip. The sanding operation simply removes any of the markings of the cutters. At the present time, experimental work is in progress to develop a fine cutter which will not leave any markings, and thereby eliminate the use of paper. However, at this time, with the tools described, close tolerances of the electrode surface can be maintained without removing the electrodes from the holders.

It is well that consideration be given to the fatigue of operators of high-speed welding machines. It has been found, through production studies, that the rhythm of the electrodes, added to machine noises such as those produced by the solenoid and contactors, can greatly affect the operator. For example, an operator who is welding at a speed of 45 spots per min. can become fatigued in 2 hr or less if the rhythm is improper. Whereas, it is possible for

an operator to weld continuously above speeds of 100 without becoming fatigued, when the rhythm results from proper electrode action. The electrode rhythm is dependent on the ratio of the "on" to "off" electrode pressure dwell time and the electrode stroke. At high speeds, as well as low speeds, the approximate "on" to "off" time is 50 pct of the welding cycle for each. The hydraulic system makes possible the desirable acceleration and deceleration of electrode pressure for proper rhythm, as well as supplying sufficient electrode dwell electrode stroke of 5/32 in. has been found to be desirable. This stroke eliminates unnecessary electime, as already noted. Over a period of six years, an trode travel, simplifies indexing problems, and permits sufficient clearance between the material being welded and the upper electrode to make possible the greatest variety of welding without the use of the electrode retraction mechanism.

In order to maintain welding quality, various specifications have been written, and interesting research has been carried out with the idea of specifying inspection and test procedures which would guarantee quality welding. This work has resulted in helping some fabricators obtain improved welding. But actual production experience dictates that these testing procedures may be carried out to a point where they seriously interfere with production, and it seems reasonable to assume that these elaborate and costly procedures are not the only way of obtaining quality welding. Reliable arc and gas welding is not dependent on constant inspection and testing as much as it is on the skill of the operator.



It has been proved in production that dependable welds can be obtained if proper consideration is given to the welding machine design for a given purpose, the tooling, set-up, preparation of materials to be welded, simplified weld strength requirements, and the training of operators, set-up men and supervisors. Unfortunately, the proper training of spotweld operators has not been stressed enough in the past.

The operator should be able to recognize if the parts are clean and well mated, and be capable of maintaining accurate electrode contour. This is more practical than the use of unskilled operators plus complicated and costly inspection and test procedures.

A minimum amount of maintenance is desired if the production sum totals are to remain consistently high. The machine design consideration which eliminates switches, solenoids, relays, etc., has already been mentioned and such improvements greatly aid in decreasing maintenance requirements as well as maintaining consistent welding.

A very useful device has been developed for checking the electrode operation in respect to pressure and the time of firing during the welding cycle. Fig. 5 shows the device placed between the electrodes of the welding machine. The machine is operated for five or six welds and a strip of paper is produced with the dynamic pressure curve and the location of firing in respect to the pressure curve at actual welding speeds. Fig. 6 is a typical test-strip graph and from it can be noted the ascending and decending pressure slopes, the duration of the electrode dwell time and "off" time, the electrode pressure delivered to the electrode, the consistency of the welds at actual welding speeds and the location of the firing in respect to the pressure curve. Fig. 7 shows equipment used to thoroughly analyze the pressure and current functions of the machine in respect to each other. It has been designed to be used by laboratory personnel when a machine is initially installed, for research purposes and occasional trouble shooting. It consists of a standard camera and oscilloscope which have been attached to each other by a pipe with a conveniently located door through which the oscilloscope screen can be observed when pictures are not being taken. Electronic units have been added as accessories to the oscilloscope which enables it to be used as a three element instrument. The equipment is portable and easily moved about.

The counting of spotwelds produced by each machine in production has been found to be a useful practice. These counts assist in determining cost, the capacity of a given machine for a specific type of work, or the production of one shift as compared to another.

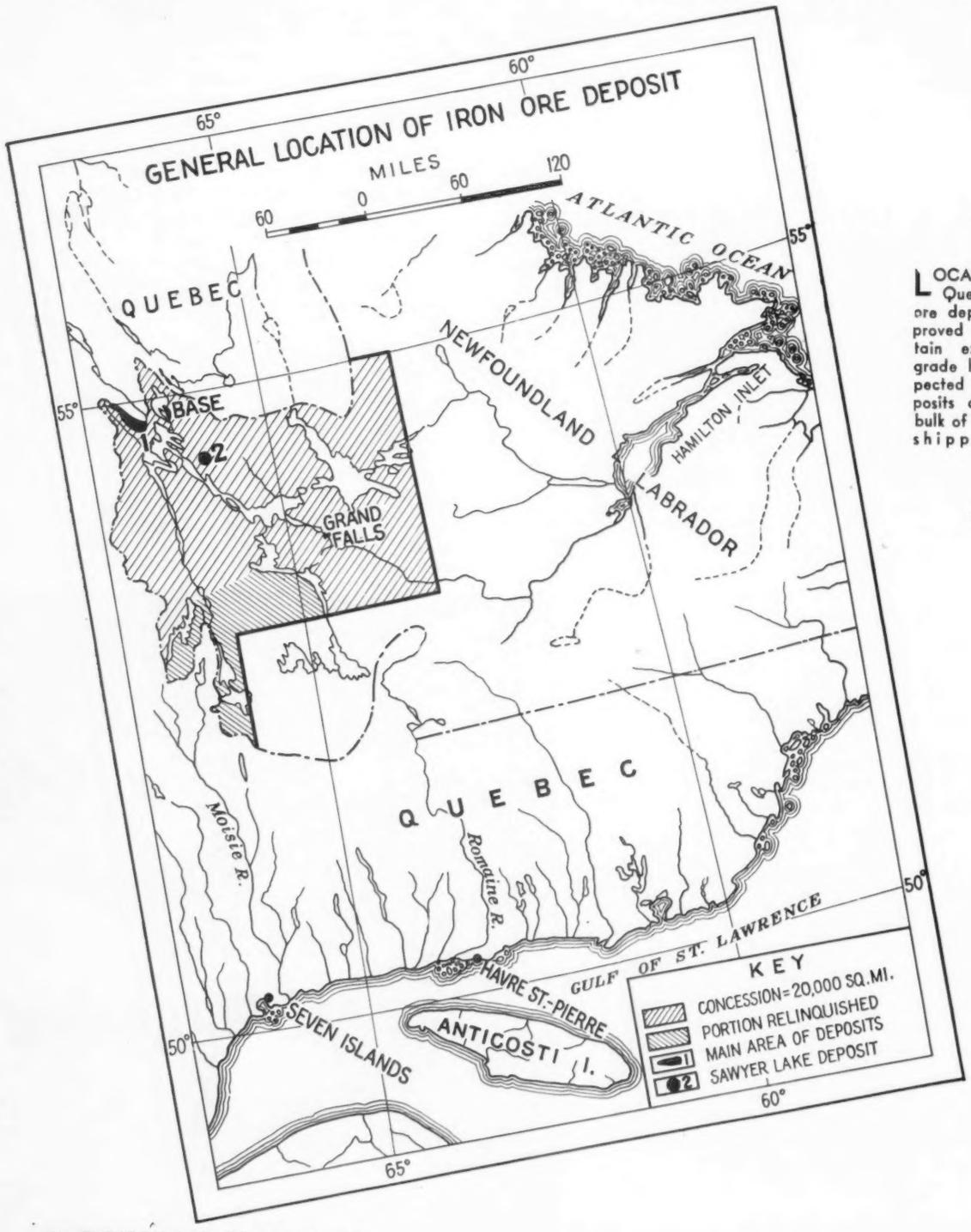
Successful high-speed spotwelding can be attained when proper considerations regarding welding machine design, tooling, setup, maintenance and the training of personnel are accomplished.

FIG. 7—Modified oscilloscope used to analyze pressure and current functions during initial installations, research, and trouble shooting.

Canada Exports Iron Ore

THE Canadian iron-ore industry has achieved its goal of self-sufficiency. While iron ore deposits have been plentiful, lack of production had been a serious handicap to the Dominion. This condition has been remedied in the past three years and Canada, long an importer of iron ore, now exports this material.

From 1920 to 1938, Canada imported 60 to 70 pct of its iron ore from the United States. To correct the anomalous situation of importing ore into a country rich in iron, an act was passed by the Province of Ontario for a 10-yr subsidy of 2¢ per unit of iron in iron ore mined in the Province and suitable for smelting. This government action resulted in



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LOCATION of the Quebec-Labrador iron ore deposits. Drilling has proved these ores to contain exceptionally high grade hematite. It is expected that when these deposits are developed, the bulk of their output will be shipped to the United States.

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Long an importer of American iron ore, Canada has at last reversed that movement and is now sending its ores into the United States. While it cannot be overlooked that much American money and effort went into building up a sizable industry in Canada, the Dominion Government did attempt to stimulate American and Canadian investments. The over-all picture of Canadian iron deposits is herein described.

By LOUIS DOREMUS HUNTOON
Consulting Engineer, New York

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greatly increased exploration and development of large tonnages of iron ore in Ontario.

Algoma Ore Products, a subsidiary of Algoma Steel Corp, has expanded its iron ore mining activity. Operations of this company include the Helen Mine which contains a carbonate of iron. Almost 500,000 tons of this sintered ore assayed 52 pct iron and 3 pct manganese. Ore reserves here, established by diamond drilling, are estimated in excess of 100 million tons. This ore has not been bottomed. Major part of the ore from this mine is earmarked for use in the United States and the remainder for Canadian furnaces.

The Josephine Mine, owned by the Michipicoten Iron Mines, Ltd., has entered into a long term contract with Algoma Ore Products for its entire output of both high grade lump hematite and lower grade ore requiring beneficiation. According to the Canadian Year Book, reserves are reported to be 2,885,920 net tons.

The Michipicoten Iron Mines, Ltd., incorporated in 1941, 2 yr after the Ontario Bounty was introduced, owns in addition to the Josephine Mine, the Ruth and Lucky Group properties, both of siderite ores. The Ruth mine has already been drilled and it is estimated that ore reserves are 18,860,800 net tons, assaying 34.5 pct iron, 6.21 pct silica and 6.25 pct sulphur, and 13,171,200 net tons of a lower grade. A Ventures Report of June 15, 1944, predicts early operation of the Michipicoten properties.

The Canadian iron ore deposit that has been much in the news is the Steep Rock Deposit.* Located beneath Steep Rock Lake on the main line of the Canadian National RR, a few miles north by west of Lake Superior, this deposit has the advantage of cheap lake haulage. Immense bodies of high-grade hematite have been proved by diamond drilling, with ore reserves in excess of 17 million tons and probable ore greater than 24 million tons. Both Canadian and United States capital went into lake drainage, diverting a river inflow into the lake and development of the property. Ore docks for lake shipments have been constructed at Port Arthur. First shipment was made Oct. 3, 1944.

Explorations have been undertaken in other areas of Canada although little more than that has been done with the discoveries. In 1936 the Hollinger Mine of Ontario incorporated under a Newfoundland Charter the Labrador Mining & Exploration Co., and secured sole rights and concessions, renewable for a period of 90 yr, to prospect and develop 1900 sq miles in western Labrador near the Quebec boundary and 300 to 350 miles north of the St. Lawrence River. Unfortunately the area is accessible at present only by airplane, and exploration work is confined to a few months during the summer.

Early geological work followed by diamond drilling gave most encouraging results. It was found that the iron-ore deposits extended across the Labrador line into Quebec so that a new company, the North Shore Exploration Co., was formed in Quebec in 1942 to cover an area of 3900 sq miles.

At the close of 1944, nine ore bodies and three prospects had been discovered. Of those that had been drilled, it was found that individual deposits are not only extensive but of exceptionally high grade hematite. Details of these deposits are given in the accompanying tables. From the location of this property and the fact that since 1943, M. A. Hanna of Cleveland has been closely associated with the Hollinger Mine, it is very likely that most of this ore will be for export to the United States. Some of it, however, may enter Quebec, Ontario and Nova Scotia.

* *Articles on Steep Rock iron ore that have appeared in* THE IRON AGE *are: "Canadian Iron Ore," by Louis Doremus Huntoon, July 20, 1939. "Steep Rock Iron Ore," by Cyrus Eaton, Jan. 21, 1943.*

TABLE I

Iron Ore Deposits

Location	Type of Sample	Grade (Iron plus Manganese), Pct	Apparent Width, Ft	Apparent Length, Ft
Sawyer Lake	Core	68.4	150	2200
Ruth Lake No. 1	Chip	57.9	100	3300
Ruth Lake No 2	Chip	59.3	175	300
Ruth Lake No. 3	Chip	61.7	400	1230
Wishart L ke	Chip	61.6	100	2400
Fleming Lake No. 1	Chip	67.9	40	750
Fleming Lake No. 4	Chip	59.6	3	600
Timmins Bay	Chip	69.4	40	1000
Ruth Lake Extension	Chip	64.9	175	1250

TABLE II

Iron Ore Outcrops

Location	Type of Sample	Grade (Iron plus Manganese), Pct	Width, Ft	Length, Ft
Two miles N.W. of Ruth Lake (Manganese content 11.0 Pct)	Chip	60.4	30	
Four and one half miles S. E. of Kivivic Lake	Chip	62.7	22	60
Four and three quarter miles of Kivivic Lake	Chip	63.8	10	30

High-Voltage Radiography

Use of 1 and 2 million-volt X ray equipment, which permits examination of steel sections up to 12 in. thick with a 2-hr. exposure, is discussed in this article.

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By DAVID GOODMAN
General Electric X-Ray Corp., Chicago

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WAR time experience with 1,000,000 and 2,000,000 volt X-ray equipment has indicated a number of advantageous uses for these units. Competition for postwar markets is expected to spur still wider applications of high-voltage radiography.

Five 2-million volt units have been built to date, chiefly for military applications. The principle of operation and advantages of the 2 million volt units are similar to the 1 million-volt machines, except on a larger scale.

The larger units permit the economical radiography of steel sections up to 12 in. thick. In radiographing an 8-in. steel casting, where the focal-film distance is 4 ft., the 2 million-volt unit is 100 times faster than the 1 million-volt machine. A picture can be taken through steel 12 in. thick in 2 hr at a distance of 3 ft with the 2 million-volt unit.

The 1 million-volt machine is shown in fig. 1 being used to inspect a circumferential weld on a pressure vessel. Fig. 2 gives comparisons of the radiographic speed between the 1 and 2 million-volt units.

It has been found that radiographs taken with 2 million-volt X-rays will clearly define defects of less than 2 pct in steel structures which have walls with thicknesses varying from 1 to 10 in.

Weighing slightly over 5000 lb, the 2 million-volt unit is 5 ft in diameter and 11 ft long, including tube extension, making for a simple, compact design which can be easily maneuvered by crane using fractional-horsepower motors.

With the recent development of 100,000,000-v electron accelerators, soon to be available to industry,

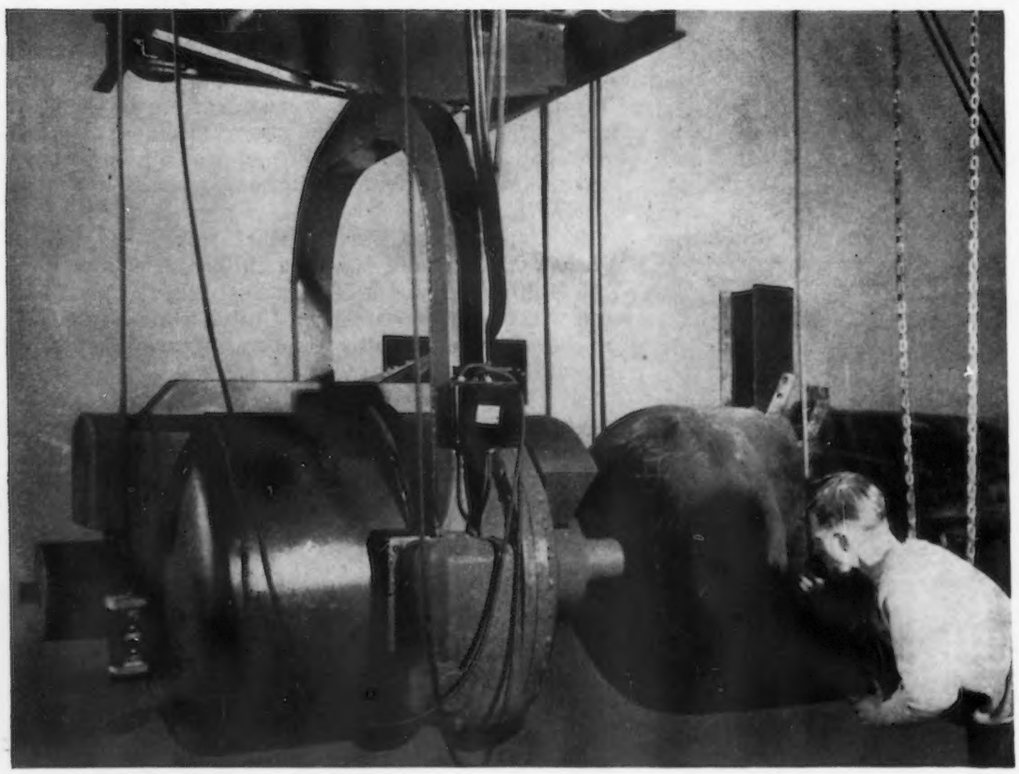

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FIG. 1—X raying circumferential weld in a high-pressure vessel with 1 million-volt unit.

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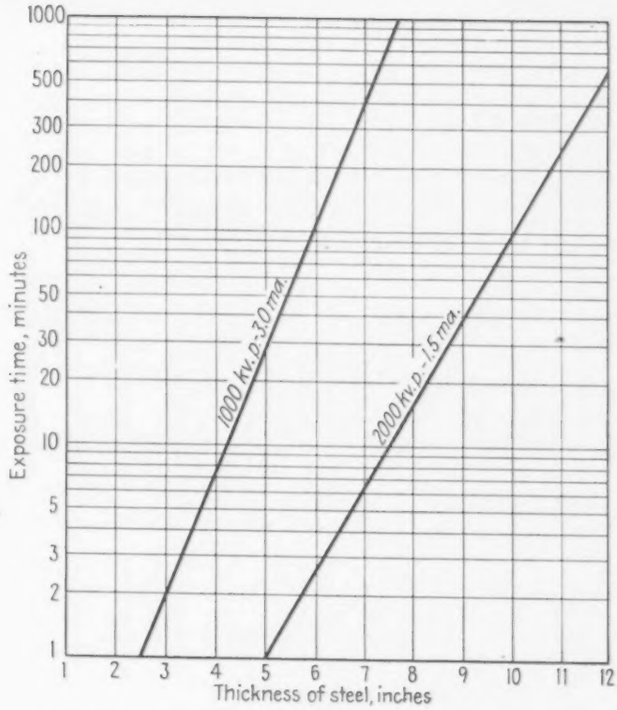
the horizon of X-ray applications will again be moved back.

The 1 and 2 million-volt units offer certain marked advantages over equipment of lower voltage, due to both greater penetrating power and design. Since more experience has been had with the 1 million-volt equipment, this article will deal with the lesser voltage unit.

Perhaps the most outstanding feature of the higher voltages is the extent to which they increase the latitude of the radiograph, showing extremely fine gradations in density to represent variations in thickness. Rays of lesser voltage might be stopped altogether by thick sections, or might pass through thin sections with negligible effect. To put it another way, high voltage equipment reduces the range in exposure times for metals of different thicknesses.

Some conception of the sensitivity possible with 1 million-volt X ray is shown in fig. 3. This is a reproduction of a radiograph of a 4½-in. thick weld in a pressure vessel taken through lead filters. On the tube side of the weld, standard single-thickness type ASME penetrameters ranging from 2 pct of 4½ in. to 2 pct of 2 in. were placed during the exposure. On the original radiograph the smallest hole in the 2-in. gage can be seen. This hole has a diameter of approximately 5/64 in., equal to slightly less than 2 pct of the plate thickness.

The outline of the 2-in. gage, 0.020-in. thick, may be clearly seen on the film and indicates that variation in thickness of less than 2 pct of a 4½-in. thick plate may be shown with 1 million-volt equipment. The improved results are not, however, found entirely in the heavier thickness ranges. Excellent results are possible in the thinner ranges, especially where the part is not of uniform thickness.



ABOVE

FIG. 2—Comparison of radiographic speed of 1 and 2-million volt X ray machines. Chart is based on focal film distance of 48 in., film type A, 15 density, 0.010 in. lead screen, and O° beam.

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RIGHT

FIG. 3 — Sensitivity of million-volt unit is illustrated by this radiograph. Standard single-thickness type ASME pentrameters ranging from 2 pct of 4½ in. to 2 pct of 2 in. were used.

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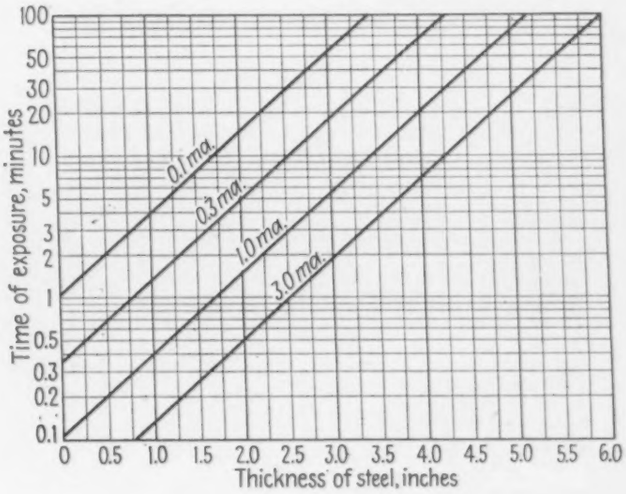
High-voltage X radiation is sufficiently softer than gamma rays to require some filtration at the film, but lead screens with a slow, high-contrast nonscreen film give the better results and eliminate the need for exposure of double films.

Another advantage is that these units may be placed far from the specimens and a larger area sprayed with X rays as powerful as would otherwise emanate from lower voltage tubes. Thus, even with smaller pieces of metal that do not demand great penetrating power, high voltage is advantageous, for placing the tube at a greater distance from the part increases accuracy by reducing distortion.

These units, because of their design, can be easily adapted to production-line radiography, in which the speed of the line and milliamperage may be varied to achieve the desired exposure strength and time, as shown in fig. 4. Table I gives some corrective factors for varying focal film distances. Among the outstanding applications for this technique are those

BELOW

FIG. 4—Versatility of million-volt units is illustrated by this graph showing variations of line speed and milliamperage available to achieve a desired exposure strength and time. Chart is based on 48-in. focal film distance, 0.035-in. lead filter screens, transmitted beam on Agfa Superay A film. See table I for correction factors for other focal film distances.



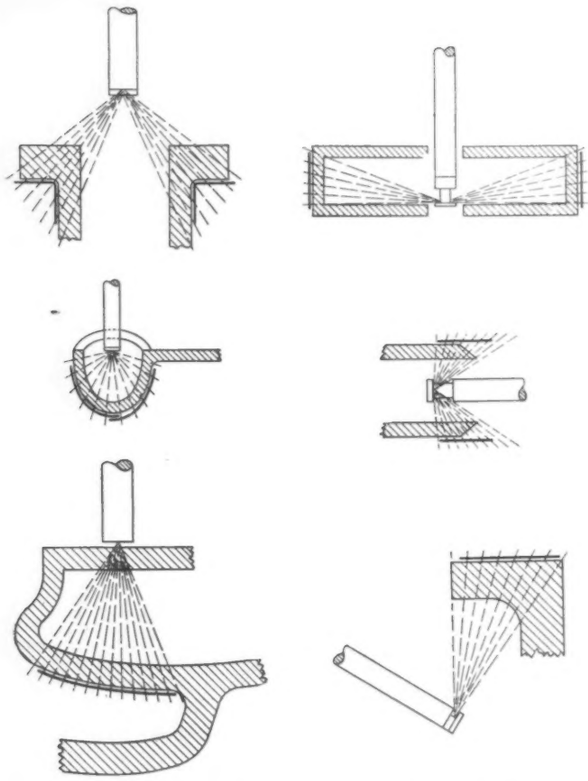


FIG. 5 — Flexibility of high-voltage equipment is demonstrated in these examples of typical inspecting problems. Most of the examples represent small sections of castings too large to be moved for each exposure.

involving the inspection of numerous identical items. In these installations, the X ray operates continuously, while frames holding the objects and films rigidly in unchanging relation to one another move around the tube on a conveyor. On half the ring the parts are exposed to X ray, while on the other half, outside the X ray room, workers remove exposed parts and the films, and mount unexposed parts and films.

In applying high voltages to the X raying of steel, the technician must know much more than photographic methods. He must know the characteristics of the radiation, its quality, quantity, absorption coefficients and scattering behavior. He must know the composition of the metal, and whether it is rolled, forged or cast. In order to aid users of this equipment in adapting it to their purposes, the General Electric laboratory at Schenectady applied million-volt equipment to the company's products and came to the following conclusions.

(1) Films placed inside a cylindrical body will show no evidence of back scatter, regardless of the diameter of the cylinder. This is due to the fact that regardless of thickness of materials, a radiograph represents a definite quantity of X rays. By the time this quantity travels the added distance of the internal diameter of the cylinder, only a fraction of it is back-scattered. This quantity has to travel back the same distance, thus rendering it negligible in strength.

(2) Films placed behind metal, wherein the X ray beam is limited by cone to the desired area will show no back scattering, for the same reasons applying to the cylindrical body.

(3) When the object is so irregular that the cone cannot conform to the object's shape but will fall within the boundaries of a lead curtain, then lead backing on the film is unnecessary in most cases. In such cases, the air distance between the back of the film and the lead exposed to the direct rays will be the governing factor.

(4) If the source is placed inside a cylindrical body film wrapped around the outside surface will show no evidence of back scatter, provided the X-ray beam is diaphragmed down so that it has to pass through the cylinder walls to get out.

With respect to forward scattering, heavy lead-foil filtering 0.030 in. to 0.060 in. is used when the film is not against the surface of the object. There is no evidence showing the need for more than the 0.005 in. of lead foil next to the film when the film is against the object surface. Where heavy lead-foil filtering is necessary, it is probably due to the fact that the round coned area is greater than the rectangular film area, causing the added source of secondary and scattered rays behind to show when the film is backed away from the metal.

Where the lead foil is used against the film as an intensifier, there is no variation in intensification from 0.001 in. lead foil and up. The 0.005 in. thickness is used because it is more practical.

One advantage of the high-voltage unit is that it permits the use of both reflected and transmitted beams simultaneously or separately. The reflected beam is that portion of the X radiation emanating from the electron side of the target; the transmitted beam is that issuing from the other side.

Thus, while one beam is used on one floor of a building, the other can be used on the floor below through an opening in the floor. The two may also be used interchangeably on the same floor. This is invaluable in casting work, for often the intricacies of the casting design taxes the ingenuity of the technician in radiographing the area desired. The flexibility of high-voltage equipment is illustrated by fig. 5. In most of these examples in fig. 5, the area being radiographed is only a small part of a large casting, too large to be moved for each exposure.

Another illustration of the flexibility of this design is the fact that with the same million-volt machine, it is possible to X ray several steel castings

TABLE I

Data on focal film distances other than 48 in. on which the chart, fig. 4, is based, may be obtained by multiplying exposure by these factors.

Distance	Factor
34 in.	0.50
36 in.	0.56
68 in.	2.0
72 in.	2.25
96 in.	4.0
120 in.	6.25
Reflected beam	2
1/4 in. Pb filter at tube	2
1/2 in. Pb filter at tube	3
Superay "B" film	2

24 ft away in 1 min with the throttle wide open, and then, putting the nose of the tube into a small opening too small for one's arm, throttle the radiation down to 3/10,000th of its capacity for a 1 min exposure with the object only 3 in. away.

The small focal spot available on machines of this class permits sharp definition to be obtained even with short target-to-film distances. Filtering may be used if it is permissible to decrease the contrast, allowing a wider range of thickness of steel to be radiographed by a single exposure.

The 1 million and the 2 million-volt units are each really several units in one, for the choice of focal spots takes the place of so many separate tubes. By filtering the transmitted beam, it is possible to duplicate the low contrast result of radium, or, using the unfiltered reflected beam, the high-contrast result of lower voltage X rays can be exceeded.

Practically speaking, million-volt equipment can make possible the radiography on cylindrical jobs of ten times the volume of metal per manhour as was required with lower voltages. On flat area, 1 million volts permits radiography of up to 64 times the volume per manhour.

The lead cone around the source of radiation can improve quality by holding to a minimum the area of steel in which secondary radiation may be generated and can save time, labor and material by making heavy lead backing on film holders unnecessary. The increasing thickness of sections which can be radiographed with high voltages means that the depth of defects in the material becomes a major problem. This can be solved by stereoscopy, or taking two pictures from different angles and viewing them simultaneously.

Combustion Engineering Co. has reported that cracks ⅛ in. deep in welds 6 in. thick can be easily detected. Until million-volt equipment was installed, it took 7½ hr to take an X ray picture of 12 lineal in. on welds 5⅜ in. thick. Now 24 lineal in. of such thickness are being taken in 15 min, a reduction in time of 60 to 1.

Bibliography

"Two-Million Volt X ray Tube," THE IRON AGE, Nov. 2, 1944, p. 62.

Report of National Electronics Conference, THE IRON AGE, Oct. 19, 1944, p. 118.

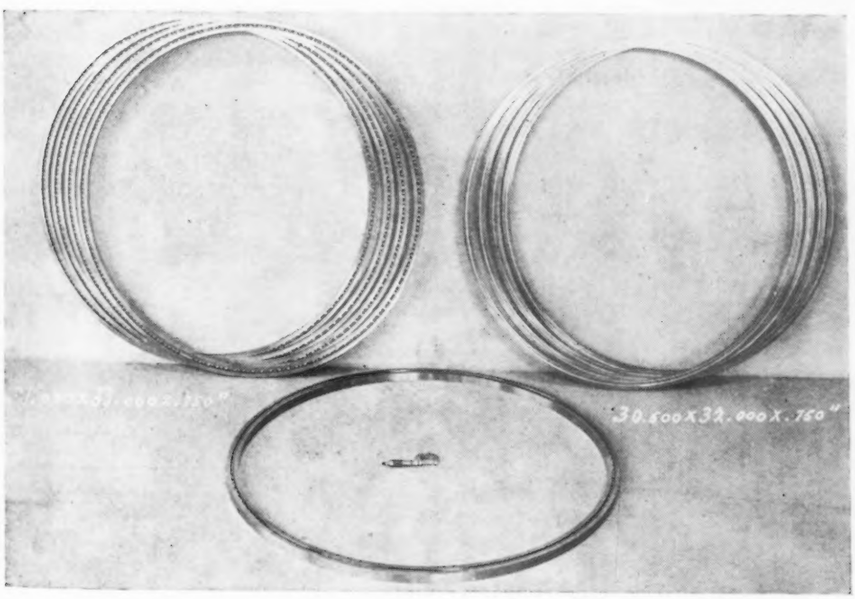
Extra-Thin Large-Diameter Bearings

BALL bearings with an OD of 32 in., an ID of 30.5 in., and a width of only ¾ in. are being produced by Kaydon Engineering Corp., Muskegon, Mich. Of the angular-contact design, these bearings use ⅜-in. diam balls and take the thrust load in one direction. They are manufactured for a specific war purpose which cannot yet be disclosed, and two bearings are mounted in opposed positions to take the thrust and radial loads.

An extra thin bearing is also being made in which the OD is 33 in., the ID 31 in., and the width ¾ in. This bearing is of the four-point contact design, and employs 115 balls of 7/16-in. diam. It takes the thrust in either direction, and only one bearing is required instead of two bearings of the angular contact design.

Chief difficulties to be overcome in manufacturing such thin sections were lack of stability for holding during machining and grinding, and avoidance of distortion during heat treating. Pot chucks and plugs were used for each stage of machining and grinding. High-carbon chromium steel was used for the races. These were heat treated in special fixtures to keep them round and to size. Inside and outside diameters were ground to a tolerance of 0.001 in.

Where minimum weight is essential, coupled with free movement and accuracy, this type of precision made bearing is said to have many peacetime applications.



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DEVELOPED for a special wartime application, these 32-in. and 33-in. diam ball bearings have a width of only ¾ in., and presented some extraordinary problems in handling and heat treating to avoid distortion.

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FIG. 1—Compressor unit for refrigerator after welding for hermetic closure on specially designed machine.

Welding Machine Speeds

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By CYRIL C. PECK
Industrial Engineer, Cleveland

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MANY articles which are required to be produced on a quantity production basis by automatic welding, are of such shape that they do not lend themselves to handling and positioning by ordinary methods. An example of this is the sealed compressor unit for refrigerators manufactured at the Richmond, Ind., plant of the Crosley Corp.

This unit, shown in fig. 1, measures 9½ in. in both diameter and height, and consists of two cup-shaped members fitted together and automatically welded around the circumferential seam to render the structure absolutely leak proof. The complete compressor unit is housed within this casing, and it is essential that the welding be performed quickly to avoid damaging the unit by excess heat.

The problem was met by the use of a special machine designed by the Cyril C. Peck Co., industrial engineers, Cleveland, employing a Lincolnweld automatic, shielded metallic-arc welder; one of numerous machines designed by this company to obtain maximum welding production. The machine, with its specially designed flux-recovery unit (right) is shown in fig. 2. All operations with the exception of loading and unloading of the casing structures, are handled by electric power supplemented by a compressed air lifting mechanism, and production is at the rate of one completely welded compressor unit per minute.

The formed steel body and end section of the casing are placed in one of three drums located on the circular welding table. The drums are hinged to permit easy insertion and removal of the work. After inserting the parts, the drum is clamped shut and the entire table top is revolved by depressing a foot pedal shown at the bottom of the table structure. This releases the indexing mechanism and positions the work directly under the automatic welding head. The welding head, flux hopper and wire electrode reel are then lowered to the correct welding position by means of compressed air and the drum and work revolves at a predetermined welding speed.

Flux is gravity fed through a tube ahead of the arc where it completely covers the arc and protects

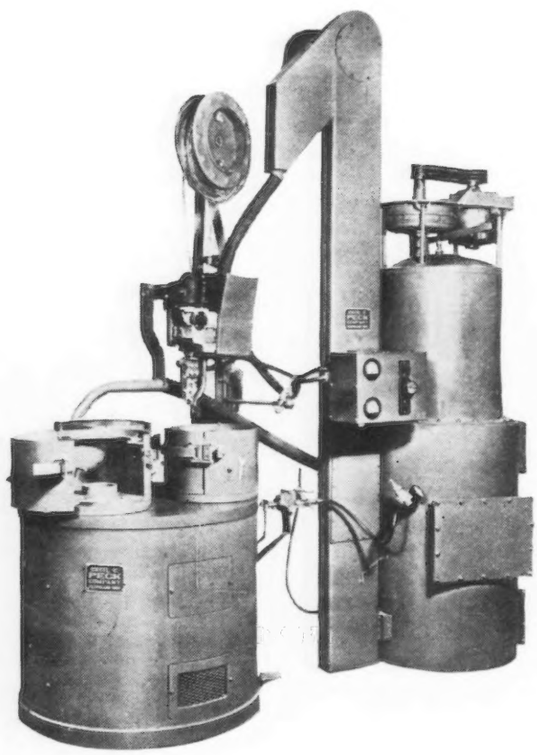

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FIG. 2—Specially designed welding machine employing a Lincolnweld unit. Flux-recovery unit may be seen to the right.

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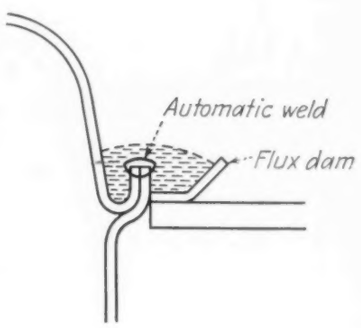
FIG. 3 — Cross-section of automatically welded edge joint showing flux-dam section of fixture.



Refrigerator Manufacture

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the hot weld deposit from the atmosphere while cooling. Excess flux is trapped in a circular dam arrangement located around the joint to be welded. A cross-sectional view of the joint showing position of the flux dam is shown in fig. 3.

During the 25 sec required to complete the automatic weld, another casing assembly is being clamped in the drum at one of the adjacent stations and a finished unit is being cleaned and removed from the drum at the third station.

When revolving the welding table from station to station, the entire welding head is raised up out of the way by a turn of the compressed air valve control lever located just above the foot pedal release for the indexing mechanism.

The granular flux used in the automatic welding operation is recovered through a suction tube which is located at the third station on the welding table. The flux is screened in the flux recovery unit seen at the right in fig. 2 and the reusable, salvaged flux is carried to the top of the vertical chute, at the left of flux unit, by means of a continuous small bucket-type belt conveyor. The flux is then dumped and returned to the flux hopper ready for re-use. Details of the flux-recovery unit are seen in fig. 4 which shows the unit partially dismantled.

FIG. 4—Flux-recovery unit with covers removed to show vacuum bag arrangement and clean-out pit.

All structures comprising the special revolving welding fixture and flux-recovery unit are of sturdy welded steel design.

Testing-Machine Grip Designed for Plastics

A GRIP of 5000-lb capacity especially suitable for gripping the glassy-hard surfaces of some plastics in the universal testing machine has been designed by Baldwin Locomotive Works' Southwark Division. The new grip, based on the Templin principle, is self-aligning, both swiveling and laterally. Its weight is only 4¼ lb.

Among other developments of Baldwin-Southwark in testing equipment is a wedge grip with a replaceable file face for use in testing machines up to 300,000-lb capacity. This feature saves the replacement of an entire grip when the teeth are worn or broken. They are available in both the flat type for tension testing of flat specimens and the V type for testing round specimens. They are particularly adapted for testing very hard materials such as music wire. The general construction is the same as for the conventional grip except that the front has been slotted to permit the insertion of the removable, specially made file face.

Tooth spacings of 10, 16 and 25 to the inch are available. The new grips make it practicable to keep a stock of faces adaptable to various types of material that may be tested.

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SELF-aligning templin grips of 5000-lb. capacity, designed by Baldwin-Southwark, being used in tension testing of plastic specimen.

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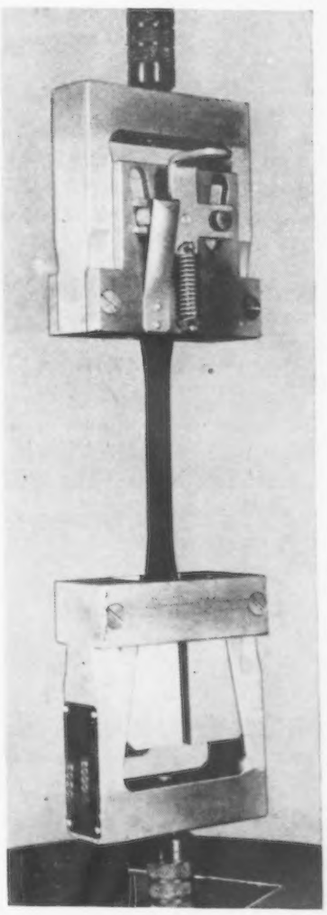

Hinges Fabricated By Welding

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By C. H. BUCKMASTER
Welding Engineer, Lincoln Electric Co., Cleveland

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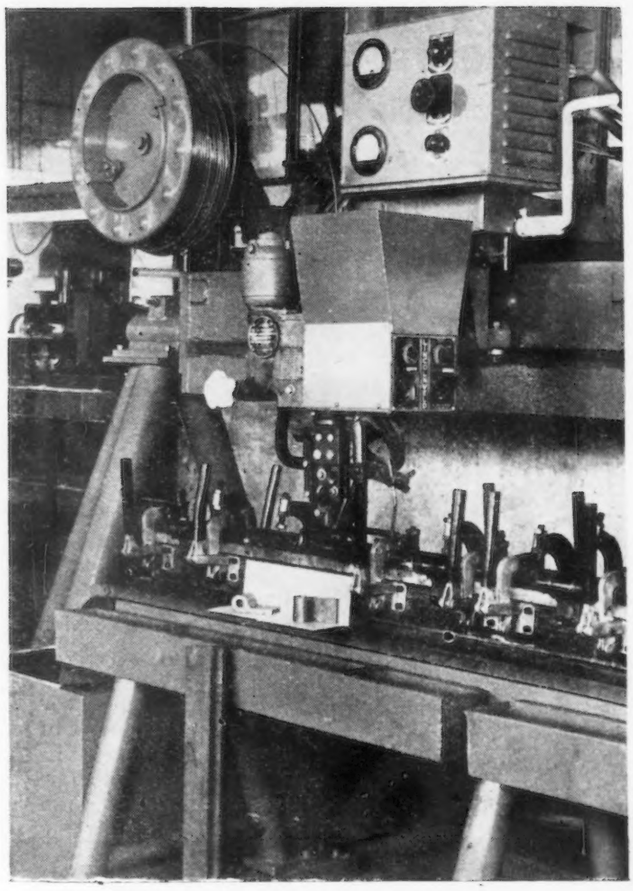


FIG. 1—Close up of Lincolnweld unit showing details of fixture. Note the two finished hinges at left in front of the welding head, and the 3-ft uncut section in front of these.

DESIGNED originally for the manufacture of army tank hinges, but readily applicable to the production of similar structures for peacetime products, an interesting automatic welding installation has been installed in the plant of the Monroe Tool and Mfg. Co., Monroe, Mich. The welding process effects a reduction of about 50 pct in cost as compared to production by the former cast design, and it is believed the setup would lend itself readily to the fabrication of numerous automotive and machinery parts.

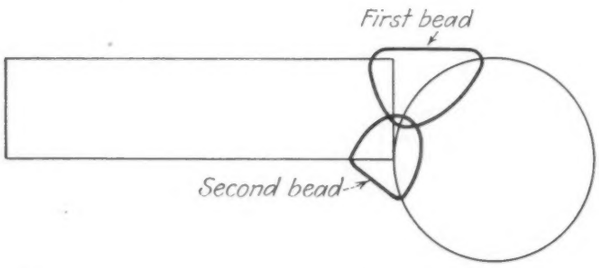


FIG. 2—Sketch of the two pieces of material used in hinge fabrication, showing the penetration of the automatically applied weld beads.

The welding setup consists of a Lincolnweld welding head, control box, wire reel, and flux hopper mounted on a beam over a fixture specially designed for handling the hinge material, as shown in fig. 1. The hinges are made of 1-in. diam round stock and 3-in. by 5/16 in. flat bar stock. To avoid excessive warpage and subsequent straightening, the material, in 3-ft lengths, is clamped into the fixture by means of self locking, quick acting hand clamps.

The entire Lincolnweld unit travels along the beam at a welding speed of about 28 ipm, applying the first bead with a weld penetration of 75 pct. The work is then turned over, reclamped, and a second bead is applied at the juncture of the two pieces of material, with a weld penetration of 30 pct. See fig. 2. Amperage for the first weld is set at 600, while the second bead is applied at 400 amp.

After applying both beads, the welded unit is saw cut into 1½-in. wide sections, and the hole is drilled through the round portion to complete the hinge. The process is said to be about 75 pct faster than previous welding methods, approximately 2400 pieces being produced per 8-hr day. It has also eliminated the former necessity of facing-off lapped-over welds, cleaning off spatter, and other time consuming finishing operations.

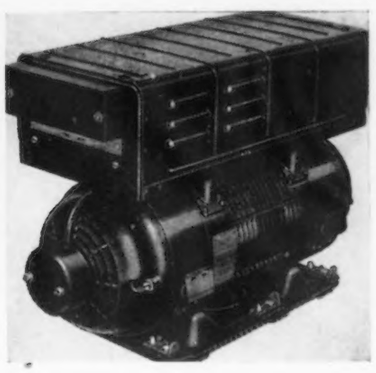
Applications such as this are of particular interest in small parts production, since they can frequently be adopted to replace forged or cast designs formerly thought to be most practical, and this particular example is indicative of the manner in which small parts can be nested for mass production by continuous, automatic metallic-shielded-arc welding.

New Equipment . . .

Power Transmission

. . . Various developments of general utility in all types of power transmission including electrical contacts, speed reducers, magnetic contactors, link assemblies, hydraulic regulators, adjustable speed drives and remote positioners are described in this week's digest of manufacturers' announcements.

THE first of a series of dc and ac inverters, has been announced by *Jack & Heintz, Inc.*, Cleveland 1. This compact light-



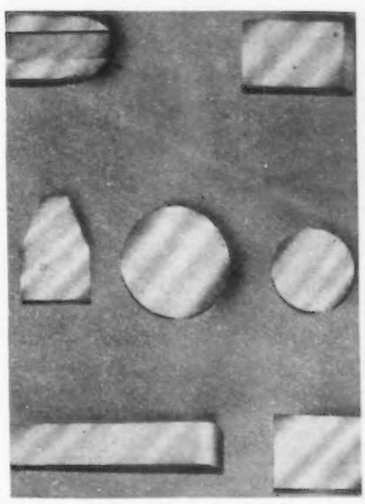
weight unit is said to provide an advancement in aircraft electrical systems, with substantial reduction in weight accomplished by the use of new lightweight metals and greatly simplified design, and also with the elimination of heavy cables and complicated electrical connections, this unit promises to simplify many installation and maintenance problems. This inverter provides a continuous and dependable source of 400 cycle, 115 v power for use in aircraft applications, with particular reference to radar.

Adjustable Speed Drive

PRECISE, wide-range, quick-response speed control for boiler draft fans, centrifugal pumps, blowers and compressors is provided by the E-M Magnetic Adjustable-Speed Drive, announced by *Electric Machinery Mfg. Co.*, Minneapolis 13. Consisting of but two operating parts, a rotating ring and a rotating magnet, this drive is said to be a compact, self-contained, electro magnetic torque transmitter used in combination with a constant speed ac motor and an electronic controller to provide split-revolution speed control. Built in ratings approximately 25 hp and larger at 1800 to 600 rpm, this drive is available in several forms to meet the requirements of new or existing installations. It can be used in combination with synchronous motors to provide power factor correction.

Electrical Contacts

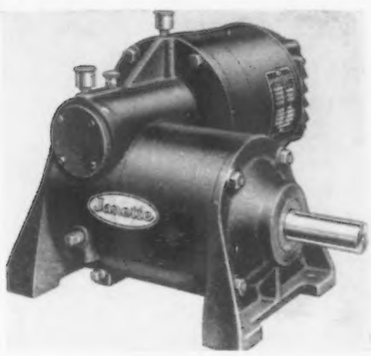
A SERIES of Gibsiloy electrical contacts made from silver tungsten and silver tungsten carbide has been announced by *Gibson*



Electric Co., 8354 Frankston Ave., Pittsburgh 21. Illustrated are a few of the many shapes in which these contacts are available. Important characteristics of these electrical contacts include higher current carrying capacity, greater non-welding characteristics, and longer life. These properties enable the designer to utilize higher current densities, with resultant increased efficiency in performance, and lower cost types of construction. On an air circuit breaker, for example, a contact with less than 1/6 sq in. of contact area, could repeatedly break 15,000 amp circuits at 600 v, without sticking, welding, or excessive wear.

Speed Reducer

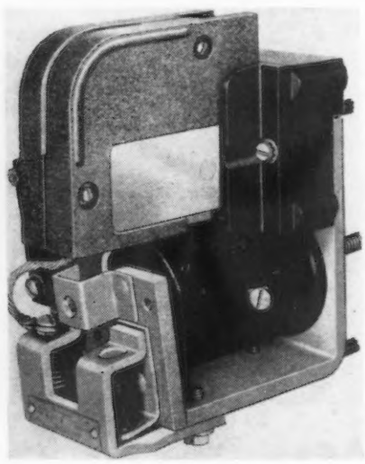
A NEW style of motorless (W1DP) and motorized (R1DP) speed reducer has been added to their line of machines, just announced by *Janette Mfg. Co.*, 556-558 W. Monroe St., Chicago 6. The style W1P (motorless) and R1P (motorized) speed reducers, which are a combination of single reduction worm gears and single planetary units, have been on the market for years. The new W1DP and R1DP are the same machines with double planetary units in place of single planetary gear units. This combination of worm and planetary gearing is said to permit the use of small, efficient,



high speed motors of from ⅛ to ¼ hp, and results in high over all efficiency, quiet operation, and output speeds as low as 1.89 rpm. The gear units can be assembled on either side of the speed reducer, which can be furnished with either foot or flange base mounting.

Magnetic Contactor

FOR machine tool control, marine and mine application, and similar severe-duty applications where space is limited, a type M dc single-pole magnetic contactor has been announced by the *Westinghouse Electric Corp.*, P. O. Box 868, Pittsburgh 30. Small, compact design of this contactor is said to save panel space, and unit construction speeds assembly and assures accurate alignment of all parts. Rear or front-connected units are available, and contactor is entirely assembled on a formed frame which



also serves as a path for the magnetic flux. The small frame contactors in this line are limited to applications in which the coil voltage and the voltage of the circuit being interrupted do not exceed 250 v. The deep frame contactors, which provide greater winding space for the operating coil, are suitable for voltage up to 600 v.

Hydraulic Regulator

THE Waterman Hydraulic Flow Regulator has been announced by *Waterman Engineering Co.*, 721 Custer Ave., Evanston, Ill. It is said to be new in two respects: (1) That it is smaller than any unit available for the purpose, and (2) It costs less than comparable units. On top of this it is said to be a precision built, quality product. This regulator is available in all pipe sizes and offers unlimited flow in one direction and predetermined rate of flow in the opposite direction. Hydraulic machine tools and lift devices can be controlled to predetermined speeds

and insured against the sudden release of hydraulic pressure.

Link Assembly

TO overcome certain difficulties arising from varying degrees of contraction and expansion between fuse barrel and the link assembly, due to alternate heating and cooling, and humidity changes, *Jefferson Electric Co.*, Bellwood, Ill., has announced a new method of construction. In place of permanently securing the ends of the

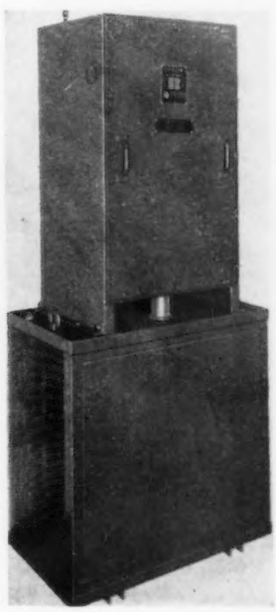
horn fibre bridge, the new link assembly is so designed that, while held securely by clips at both ends, freedom of motion is permitted to avoid unbalanced strains and possible buckling. This improved construction is said to be vitally important so as to assure dependable resistance against the varying conditions of heat, moisture and pressure.

Remote Positioner

THE Seco Positioner, a device to remotely control the output voltage of a motor-operated Powerstat Variable Transformer with close tolerance to preselected limits has been announced by *Superior Electric Co.*, Bristol, Conn. It is designed for the requirements of the laboratory and industry, and is compact, rugged, and easy to operate by means of control dials on the front panel. By setting these dials, the output voltage of the motor-driven powerstat is adjusted in accordance with dial position. Connection to another control or resetting of the control in the circuit causes a corresponding change in the powerstat output voltage. By alternate connection to a series of control stations, the output voltage of the motor driven powerstat is changed in accordance with the dial position. Dielectric and induction heating, infra-red drying, photographic operations, chemical processing and vacuum tube manufacture are among the notable uses for which the positioner is applicable.

Regulator

THE Haug System Power Factor Regulator has been announced by the *Modern Control Equipment Co.*, 176 W. Adams St., Chicago. Connected to the lines of commercial power users, the makers claim that it will raise the



power factor by taking the magnetizing current off the line with a negligible cost in operation, and by increasing the power factor, it will greatly reduce the monthly power bill. It will also increase low voltage to desired value where voltage was previously low due to poor power factor. Connected apparatus will, it is said, function smoothly, resulting in more uniform and efficient operation of all motors and machines, particularly welding machines, and a substantial saving in manhours, due to greater line stability and apparatus efficiency.

20 TONS OF STEEL CASTING

and every pound

Twenty tons, 40,800 pounds to be exact—that's the actual weight of the husky rolling mill pinion housing illustrated. It's a lot of steel in one piece, but after heat treating operations by PSF experts, every pound of this massive hulk is free from strain or stress, and ready to give dependable service. Cast with skill born of long experience, tested by advanced laboratory methods, it is correct in dimensions and analysis, and completely uniform in grain structure and strength. Call PSF in on your next steel casting job and let progressive foundry techniques get you results.

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Assembly Line . . .

STANLEY H. BRAMS

• Manufacturing cost increases dramatically detailed by Henry Ford II . . . Most popular Ford was produced at cost $313 above OPA price . . . Seven potential and actual new entries in auto field . . . Chrysler shows 1946's.

DETROIT—Lost sight of in the problems developed by the late and now-concluded labor crisis has been the problem of worker productivity, which will be more with us and more in focus during the months ahead, now that a new wage plateau is indicated.

Worker efficiency is well below the levels customary in the prewar days, and all the king's horses and all the king's men are having their troubles trying to bring it up again. Contract provisos as in the Chrysler agreement, which bespeak the mutual desire of management and labor to restore prewar standards, can do little good by themselves. The entire process apparently must be one of evolution and gradual accustoming of the workers to higher rates of output, just as they were conditioned during the war to the lower rates.

The brightest light shed on this problem yet has come, as have so many other things in past months of interest, significance and precedence, from the Ford Motor Co. Speaking before the Commonwealth Club in San Francisco recently, Henry Ford II really "told all" with reference to manufacturing costs.

In 1941, he said, the super deluxe tudor, most popular of the Ford cars, reflected total manufacturing costs of $512, built up from labor costs of $76 for 87 hr work, material charges of $304 and overhead amounting to $132.

This same car, built 12 months later, in 1942, cost $681 to manufacture, up about 33 pct from the $512. Labor costs had risen and 15 more hours went into the car, advancing that proportion from $76 to $124. Materials cost grew from $304 to $343, and overhead from $132 to $225.

In November, this modestly modified the super deluxe tudor required a manufacturing cost of $962, 87 pct more than in 1941 and 41 pct more than in 1942. Worktime involved in building it had risen from 87 hr in 1941 and 102 in 1942 to 128 hr. Labor costs for this work had gone up to $152. Overhead had increased to $354, materials amounted to $535.

Interestingly, this car which cost $1041 to build is wholesale ceiling priced by The Office of Price Administration at $728.

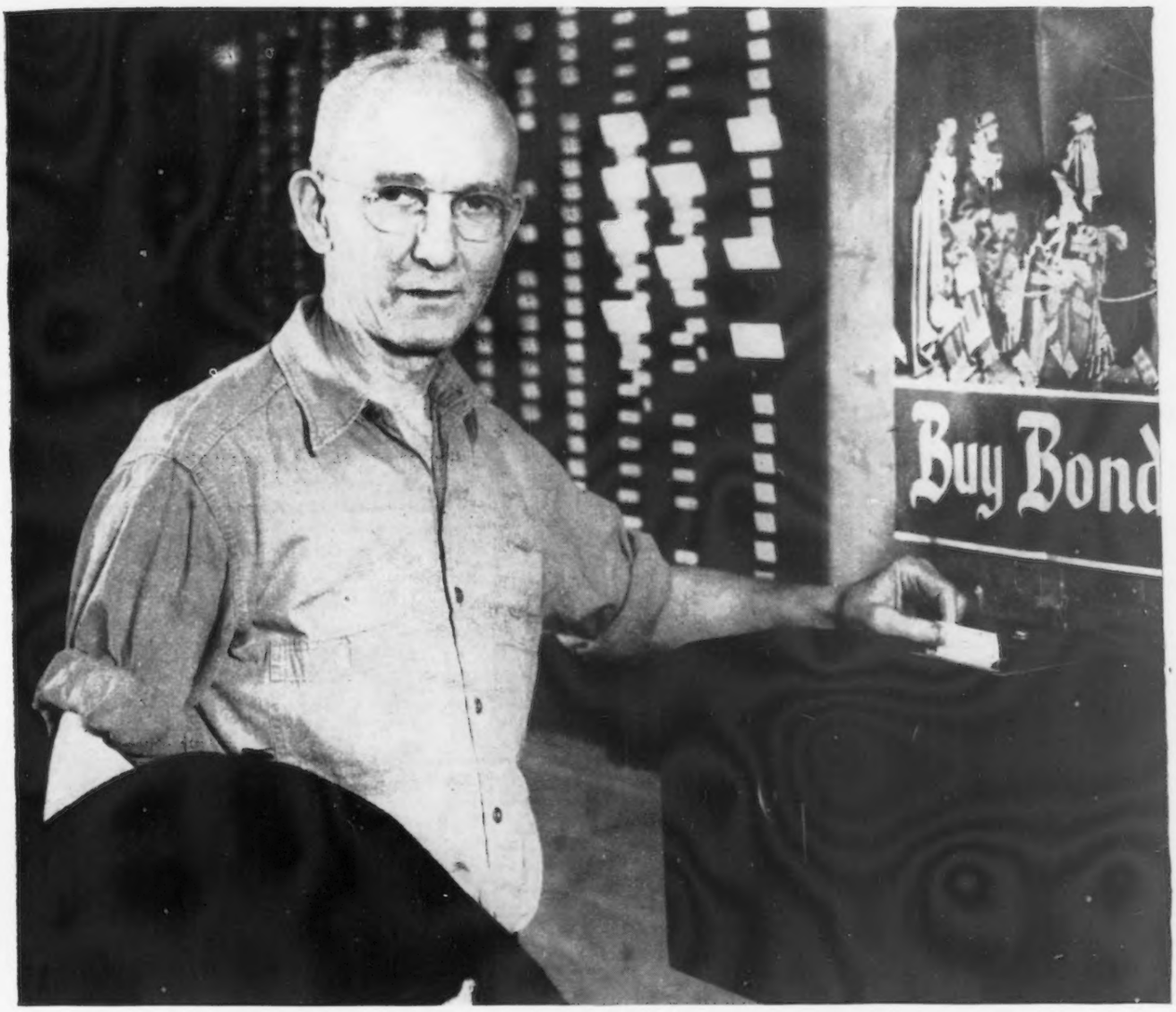
Little wonder Ford Motor Co. is seeking changes in thinking on price ceilings! In another portion of his speech the young Ford told of a supplier making thousands of small truck parts at 50¢ a piece, on which costs had risen last fall to the point that he asked OPA for permission to charge 61¢. OPA refused to go higher than 54¢, so the supplier, according to Mr. Ford, went out of the business. The company finally obtained two new suppliers for this part, one furnishing at 82¢ and the other at 84¢—both with OPA approval.

NOTWITHSTANDING problems like these, the woods are full of would-be entrances into the automobile industry. Seven companies are making motions toward the business, and probably many more than that have the idea in their corporate heads.

One of these, Kaiser-Frazer Corp., is already moving toward production of its new model. A second, the small car of the Bobbi-Motor Car Corp., San Diego, Calif., hopes to get to the production stage before too long. Also in this class is the new product of Crosley Corp. slated for production before too long.

Beechcraft has lately revealed plans for building a $5000 luxury car which obviously would be sold in small volume. In more of a blueprint and thinking stage is the model being contemplated by West

NEW CHRYSLER: *A good view of the clean hood lines and front end of the 1946 Chrysler, and of the new massive grille and wrap-around bumper, is provided in this illustration. Safety rim wheels are standard on all models, said to make it virtually impossible for a tire to come off the rim or slip crosswise when it blows out.*



Not 62,940 hours for nothin'!

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Maybe you fellows who buy threading tools don't realize it, but those hours mean something when you buy a tap, die or gage with the GTD mark on it. Those hours mean better workmanship—the result of years of learning by doing.

You might be interested to know that in the "Greenfield" organization there are 296 of us who have spent 20 years or more at our jobs—making high quality threading tools. *When you buy "Greenfield"—you buy precision. And precision takes practice.*

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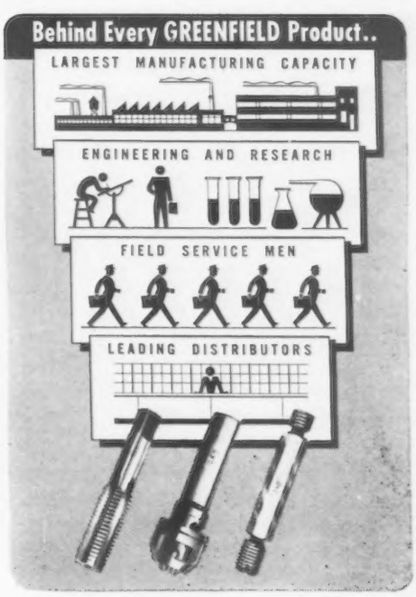
GREENFIELD, MASSACHUSETTS



coast interests for distribution through the large retail establishment of Allied Stores Corp. Even more nebulous is the vague planning of Jack & Heintz Co., Cleveland, for building an automobile.

Somewhere in between the gleam in an entrepreneur's eye and final assemblies coming down the line is the Tucker car, which has now progressed to the point where a public relations council has been hired in Chicago to start the traditional drum beating. The radically designed Tucker (THE IRON AGE, Dec. 20, 1945, p. 74) would be built in the erstwhile Dodge-Chicago plant, for which negotiations are supposedly progressing well.

Officers of the corporation include two well known automotive figures —Ray R. Rausch, former top production executive at Ford, who is vice-president in charge of manufacturing; and Joseph D. Burke, who was a prewar Dodge truck sales manager, handling the vice-presidency in charge of sales for Tucker Corp. Eugene L. Reason, one time purchasing agent for Chrysler Corp., is director of purchases for the company.

DETAILS on the 1946 model Chryslers have now been announced. The design of these new vehicles is similar to that on the custom-built exhibition Chrysler Newport, which attracted considerable attention before the war. Front fenders are faired back into the sides of the car. The entire front end has been redesigned with the now-customary heavy grille work intended to develop a low massive appearance.

Capping the engineering features is an improved hydraulic transmission with the control unit built in. Gears have been made larger and an unlocking feature is provided. Improved acceleration has been secured by reducing the transmission gear ratios. Two driving ranges are provided, high and low, and the entire assembly is expected to contribute to the effectiveness of Chrysler's fluid drive.

Aluminum pistons have been restored, replacing the cast iron components used in the 1942 line. Plated piston rings are also standard. The intake manifold has been designed to provide greater flexibility at low speeds, the company reported, and improved torque in the same range.

A new type of gasoline filter is provided in the fuel tank, making it possible to dispense with the use of a filter at the carburetor and a sediment bowl on the fuel pump. Wheels are equipped with plastic white wall wheel rings. The size of the wheels, incidentally, has been reduced from 16 to 15 in. On 6-cylinder models tires are 6.50 and on the 8-cylinder 7.00.

The Chrysler line comprises six models, the Royal, Windsor, and Town and Country, powered by 6-cylinder engines, and the New Yorker, Saratoga and Crown Imperial, powered by 8s. There are 26 body styles and an option of 13 standard colors.

Survey Shows Gain In December Employment, Average Hiring Rate

Cleveland

• • • **Despite national** strikes, industrial employment has shown some gain during December, and 34 manufacturers indicated further payroll increases throughout January, according to J. W. Vanden Bosch, analyst of the Cleveland Chamber of Commerce.

Based on a survey of 100 large manufacturers, employing 52 pct of Cleveland's hourly-paid factory workers, overall industrial employment here was 179,420 workers as of December, a gain of 530 over the 178,890 employed in November.

Strikes, directly or indirectly affecting Cleveland production caused 8058 workers to be idle here in November. This number was reduced to 5620 in December.

While the motor vehicle and parts plants covered by Mr. Vanden Bosch's survey dropped nearly 2½ pct as a result of aircraft parts curtailment and uncertainty in the automobile industry, the large iron and steel production group, Mr. Vanden Bosch pointed out, more than offset the decrease in aircraft and automotive industries because the former employs 32,753 workers, while the latter accounts for 23,123 wage earners.

The average hiring rate for common labor increased almost 1c. per hr during December to an all-time high of 76.5c. Several companies moved their rates above 80c. an hr in recent weeks. The average working week in December was 44 hrs, compared with 44.1 hrs in November. Compared with 34 plants indicating further gains in employment throughout January, only three expect to decrease forces, while 19 companies are operating at the same levels maintained last month.

Discusses Methods Of Speeding Steel Sales

Washington

• • • **Methods of** expediting the sale and insuring equitable and efficient redistribution of surplus steel were discussed on Feb. 12 at the first meeting of the Surplus Usable Steel Products Industry Advisory Committee of the War Assets Corp. The committee agreed to meet again in about six weeks, the exact date to be announced later.

William H. Kelley, assistant vice-president, War Assets Corp., was government chairman of the meeting, and Guy P. Norton, director, Materials Branch, also took part in the discussion, which included a proposal for increasing WAC steel allocations to warehousers to sustain manufacturing operations during the steel strike. The meeting adjourned without making any formal recommendations.

Members of the advisory committee are: Jerome Epstein, Western Iron & Steel Co., Dayton; Joseph Gendelman, National Sheet Steel Co., Detroit; William Fabrikant, Dulien Steel Products, Inc., New York; J. A. Dolan, Dolan Steel Co., Bridgeport, Conn.; Arthur Cohen, Metal Purchasing Co., New York; Philip P. Brown, Detroit Steel Corp., Cleveland; William G. Weiss, Midland Steel & Equipment Co., Chicago; Harold E. Weinstein, Calumet Iron & Supply Co., E. Chicago, Ind.; George L. Tillson, Edgcomb Steel Corp., Hillside, N. J.; H. Dudley Jones, Allied Metals, Niles, Ohio; Edwin E. Hokin, International Rolling Mill Products, Chicago; and Harry B. Hoffman, The Wilkoff Co., Youngstown.

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CLAD METALS

POLISHED BLUE SHEETS

SEAMLESS TERNE ROLL ROOFING

Washington . . . L. W. MOFFETT

• Government seeks buyers of most of its huge war shipbuilding yards . . . Ickes' report on dwindling raw resources precedes resignation as Interior Secretary.

WASHINGTON—The major part of the government-financed shipbuilding capacity, amounting to $1013 million, will not be useful for postwar shipbuilding, according to the last report to Congress issued by the Surplus Property Administration before that agency was merged with the War Assets Corp.

The report points out that "a policy of attempting to retain the surplus yards in shipbuilding could result in undue hardship to the old yards to the detriment of the country's best interests. It might injure the very skills upon which the government depended in carrying out the wartime shipbuilding programs of World Wars I and II."

The recognition on the part of surplus property officials that it would be foolhardy to attempt to force utilization of the government-financed facilities has resulted in the report's receiving a rather warm reception from Congress.

The expansion of 24 prewar yards accounted for $365 million of the government expenditure. There were 60 shipyards in which the government investment exceeded $5 million each, including 20 privately-owned prewar yards. There were 24 located on the East Coast, 19 on the West Coast, 14 on the Gulf Coast, and three in the Great Lakes area. The cost of the 60 yards was $909 million, or 90 pct of the expenditures on all shipyards.

The widespread character of the shipyards has resulted in serious problems of movement and reabsorption of the labor force. It is estimated that a maximum of 300,000 workers may be employed in postwar shipbuilding, as compared with a total of 1,700,000 at the wartime peak.

The expanded capacity of the privately-owned yards plus the new yards marked for retention by the Navy and the Maritime Commission alone add up to an increase of approximately 200 pct above prewar capacity. Therefore, the report points out, other yards available for disposal have little chance of being used for shipbuilding.

Recognizing that the problem of disposal will be primarily one of finding users for other purposes the report presents a number of disposal possibilities other than for shipbuilding, both with and without portions of the movable facilities and equipment, including oil refineries and tank farms, automobile assembly plants, cement plants, steel storage yards, steel fabricating plants, imported ore smelters, and many others.

It is also pointed out that when disposal of sites has to be made for any of these uses, it is probable that much of their original cost will have to be written off as part of the inevitable cost of the war.

It is generally conceded that a larger percentage return can be expected from the land cost, which accounted for less than 5 pct of the total in most cases, than from any other part of the government investment. Engineering and supervision expenses will have to be written off entirely. While buildings designed especially for shipbuilding may have potential uses as buildings for other enterprises, such uses will not likely return the wartime cost of constructing the special facilities. A considerable part of the machinery, tools and equipment in shipyards are of special-purpose design and therefore will have limited use outside shipyards.

IT is recommended that government-owned facilities in privately-owned yards should be disposable, in whole or in part, to the owners of the yards. They are unlikely, however, to be much interested in purchasing facilities or equipment declared surplus in other yards.

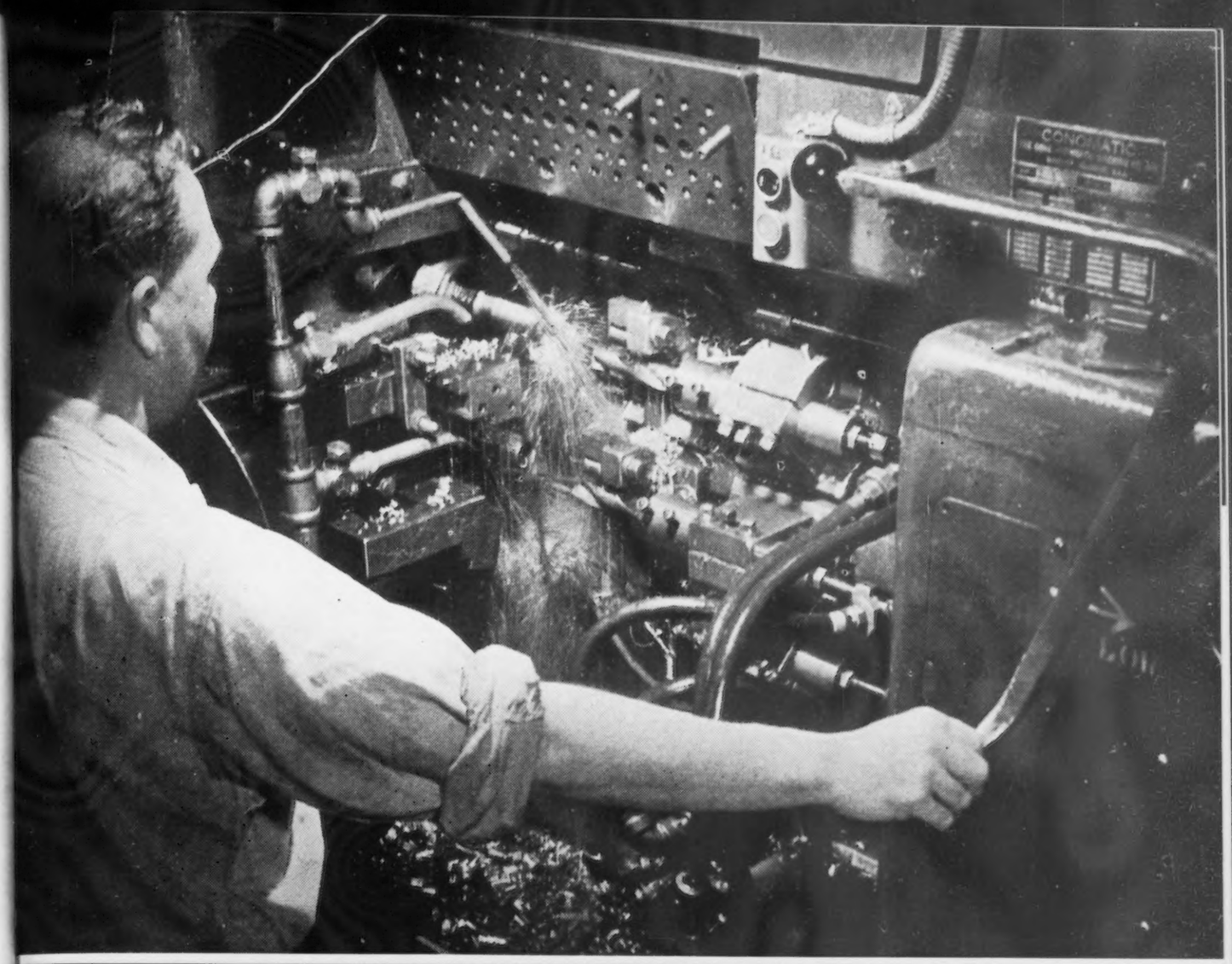
When sites are sold for purposes other than shipbuilding, it will commonly be necessary to remove much of the facilities and equipment and dispose of them separately. Removal will also be necessary from leased sites and lands owned by operators. Many of the buildings are of easily demountable and movable steel construction type and capable of a wide range of industrial uses. It is expected that there will be a ready market for them insofar as they cannot be sold with the sites.

The market for the equipment will be found partly within the shipbuilding industry, but there will be tools and other usable equipment which should be offered to other industries. Possibilities of such sale are limited by the special nature and design of much of the equipment. Returns on sales are expected to be low, since a large percentage of the equipment has depreciated to a very low value through extreme, continuous use.

The opportunity appears to exist for extensive sales of used shipyard equipment in foreign markets, according to the report. Heavy lifts, gantry cranes, and certain machine tools have an especially good prospect of sale for shipyard use in foreign markets. Prospects seem good in Europe, South America and China.

The report also recommends the storage in yards of all facilities and equipment not disposed of within a reasonable time to preserve them for any future emergency.

The present disposal program for shipyards is discussed fully in the report. The Navy plans to hold in commission 25 new yards and the facilities in 12 privately-



5 OPERATIONS – *33 Seconds*

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Used as Machine Lubricant and Cutting Lubricant on 8-Spindle Conomatic

For exacting metal-cutting requirements, the Sun Oil Company perfected "Sunicut," a clear, free-flowing, straight, cutting lubricant, produced by an exclusive process.

Here is a typical example of the fast, accurate work which is being done in hundreds of shops with Sunicut:

Machine: Cone Automatic Machine Co. 8-spindle Conomatic
Operation: Turning (2⅛" Form-Tool), drilling and reaming (3⅛" depth), knurling
Material: 1335 Hot rolled bar stock
Spindle Speed: 275 R.P.M.
Cycle: 33 seconds
Feed: (drilling and reaming) .007" per revolution
Machine lubricant: Sunicut
Cutting lubricant: Sunicut

Sunicut has high lubricating value and is an excellent dispenser of heat. It makes possible heavy cuts at high speed while maintaining accuracy and finish. Call the Sun Cutting Oil Engineer in your territory for full information, or write...

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owned yards. The Maritime Commission plans to retain four new yards and the facilities in one privately-owned yard. Geographically, 24 of the total yards to be held are on the East Coast, 11 on the West Coast, and seven on the Gulf Coast.

There are at present 16 new shipyards costing over $5 million which are disposable, as well as facilities costing over $5 million in eight privately-owned yards, or a total of 24. Nine are located on the East Coast, nine on the West Coast, three on the Gulf Coast, and three in the interior.

There are 54 new yards and facilities in three privately-owned yards costing less than $5 million in each case which are disposable.

The principal problems of disposal arise in connection with yards wholly owned by the government. These will be classified to their best use and sold so far as possible to single purchasers such as municipalities or industrial enterprises. Where this is not possible, or does not best fulfill the objectives of the Surplus Property Act, the property will be offered in parcels under appropriate classifications, subject to removal and separate dispsoal of all or parts of the movable facilities and equipment.

Leases will be considered only when outright sale is impracticable or is not the best method of fulfilling the objectives of the act. Prices will be fixed in accord with present regulations relating to different classifications of real property. Special terms of sale will be considered to promote the interests of small business, to promote public uses by priority purchasers, or otherwise to fulfill the objectives of the act.

No yards costing over $5 million have been declared surplus. but in the case of several yards the owning agency has taken steps toward disposal and final sale is imminent in a few instances.

This report to Congress will be followed within a few weeks by the final report of the series, which will deal with disposal problems in electronics.

* * *

Shortly before sending his resignation to President Truman to end his record smashing term of almost 13 yr as Secretary of Interior, Harold L. Ickes issued his annual report and with it made definite recommendations for building up and developing the country's raw resources.

Pointing out that the drain of war on our national natural assets has been staggering, Mr. Ickes said that only nine of the major minerals remain in known domestic reserves in great enough quantity of usable grade to last 100 yr or more. Among these he lists iron ore, magnesium, bituminous coal and molybdenum. Mr. Ickes added, however, that it is necessary in addition to having great quantities of particular metals we must have the alloys that go into those products. Manganese, he explained, is just as important as iron is in making of most steel, and there is only a two-year supply of usable manganese ore in proved domestic reserve. So, Mr. Ickes said, are vanadium and tungsten as necessary as iron is in making certain steels that are essential in time of peace or war; in proved domestic reserves there is only a seven-year supply of vanadium and a four-year supply of tungsten.

"We have," he stated, "less than a 35-yr supply of 19 other minerals; among them, petroleum, copper, lead, tin, zinc, nickel, bauxite, chromite and cadmium. Our reserves of high-grade coking coal are low. We do not know just how low because our knowledge of reserves is not yet so extensive as it should be. Our high-grade iron ore, the kind that can be mined and smelted most cheaply, would be exhausted in about 22 yr at a normal rate of use."

Here are things that Mr. Ickes said should be done: Stockpile; import emergency supplies that are scarce, store them and add to the reserve from domestic surpluses whenever metals are produced in greater quantity than they are used; intensify explorations for new reserves; intensify experiments in extracting metals from low grade domestic ores by means of new and improved processes; continue experiments in all processes for beneficiating low-grade ores; find more efficient methods of reusing scrap metals; find out how operators can be induced to take more oil from nearly dry wells; regulate production methods so that waste in the process of mining will be minimized; prevent unnecessary use of scarce and essential reserves; reserve coking coal for steelmaking; act upon advice of competent re-

(CONTINUED ON PAGE 104)

THE BULL OF THE WOODS — BY J. R. WILLIAMS

IS THIS ONE ?
UH-AH--NO- I WANT RED ONES--MEAT STAMPS! THAT'S A GAS STAMP, BUT I'LL TAKE IT IF YOU~ UH~~
A NUT! HE'S ADDIN' RATION STAMPS TO HIS COLLECTION!
YEH, THEY'RE A BAD MEMORY-- THEY'LL BE WORTH ABOUT TWO BITS IN FIFTY YEARS-- THAT'S A LONG TIME TO HOLD A GRUDGE, AIN'T IT?
J.R.WILLIAMS
2-22
THE TRASH COLLECTOR
T. M. REG. U. S. PAT. OFF.
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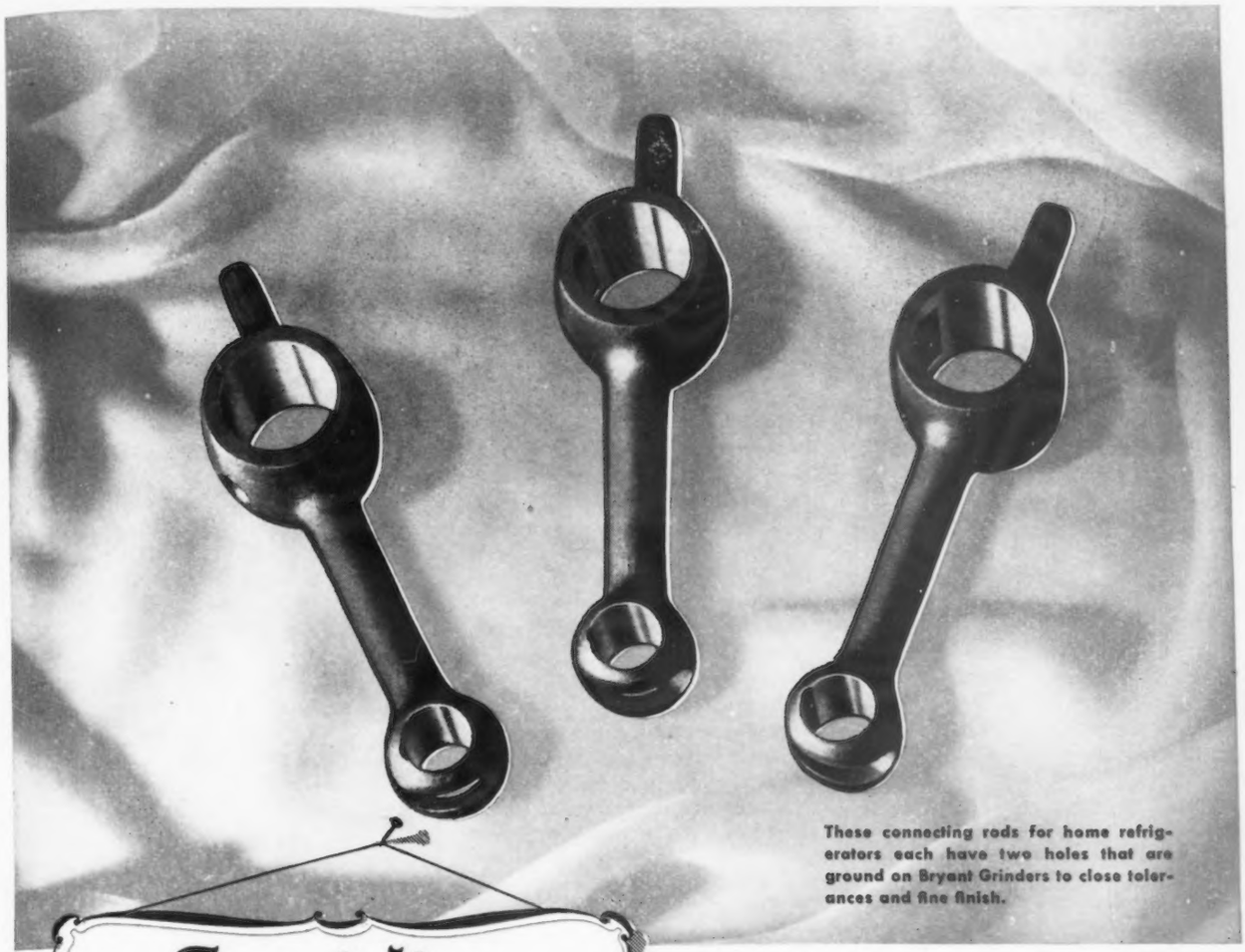

These connecting rods for home refrigerators each have two holes that are ground on Bryant Grinders to close tolerances and fine finish.

Specialists in Forged Steel Jewelry

No, we don't sell it; we don't make it, but we do build internal grinding machines that make it. The three connecting rods for home refrigerators, shown above, are typical examples of the type of work that is ground on Bryant Internal Grinders. They are truly jewel-like in their finish, but that is not enough—to be sure, Bryant Grinders produce metal parts that have surfaces finished correctly to millionths of an inch, when desired, but Bryant machines also produce these same parts with holes that are truly round and straight. These are basic elements that Bryant insists upon to assure Bryant users that their parts and products will last for years without mechanical failure.

WE KNOW YOUR PROBLEM IS DIFFERENT . . .

. . . practically every internal grinding problem is different. But when you require extreme accuracy or high production, or *both*, your first step should be to study your problem with a man who makes it his business to solve them. Your first step should be to—

Send for the Man from Bryant!

BRYANT

BRYANT CHUCKING GRINDER CO.

SPRINGFIELD, VERMONT, U. S. A.

West Coast . . .

OSGOOD MURDOCK

• Fabricators raise tempest as sheet shortage becomes critical and threatens plant closings . . . Mills and government assailed in effort to get material.

SAN FRANCISCO—What is to be the fate of the hundreds of sheet metal fabricating plants on the Pacific Coast which today face closure because of the sheet famine? This question has raised a minor tempest which threatens to sweep from the shops, into Chambers of Commerce, through the offices of the Maritime Commission, UNRRA and War Assets Corp., over the sales offices of sheet producers and wind up whirling around the dome of our nation's capitol.

Fabricators believe that they have reason to get excited—practically all of them could use from 30 pct to 100 pct more sheets now than in the prewar era and instead of getting increased tonnages they have been placed on reduced allotments by the producers—in many instances receiving only 50 pct of the tonnage used before the war.

Pleas for relief are coming from many of the long established manufacturers of stoves, furnaces, drums, light walled pipe, building products and pails as well as from such expanding companies as the Norris Stamping & Mfg. Co. which alone insists it could use 10 to 12 times as much steel today as it did in 1940. It is reported that in the Los Angeles area alone five metal working companies employing on the average of 100 workers each, are contemplating shutting down completely because of a lack of material. In the San Francisco Bay area several sheet fabricators are extremely uncertain of their future and are working only about 50 pct of their men part of the time as they receive small shipments of sheets.

A local plant, which is one of the largest furnace manufacturers in the country, has been told by the steel company which has been supplying it almost exclusively with sheets for many years that starting next month allotments would be steadily reduced and that within a year they would discontinue the supply completely.

Rallying to the support of these small manufacturers, who are representative of California industry, Russell F. Bjorn, secretary-manager of the Stockton Chamber of Commerce, sent the following telegram to Representative J. Leroy Johnson:

"Following situation called to our attention which is all important, particularly serious to California. Steel companies recently announced policy to withdraw basic steel supplies and shipments to California industries. As result many plants including local ones are faced with moving out or shutting down. Our Chamber seeks your suggestions as to how we can get congressional action first on getting steel companies to resume shipments to California and second, what governmental agencies should be contacted to cut down quota of foreign steel shipments so this saving can be spread among United States consumers of steel thereby alleviating situation. Also what agency to investigate government stockpiles of steel sheeting which might be released to expedite matters. This sudden withdrawal of steel companies from California market extremely serious and if allowed to continue would be economic death blow to many key industries in our state and other western territories."

The Chambers of Commerce of San Francisco, Los Angeles and the State are said to be organizing a campaign to remedy the shortage.

It is realized by western fabricators that the sheet shortage is not purely a local condition, but it is their contention that producers have been discriminating against them in favor of sheet users closer to the steel plants.

REPRESENTATIVES of the steel producers which have long supplied the western sheet market profess unhappiness over the situation and attribute it to several factors: Extremely heavy demand near their eastern mills which can be met with little or no freight absorption; it s more profitable to produce specialty sheets than the especially scarce commodity grades; Civilian Production Administration allocations for shipment abroad are cutting into supplies; and there has been a reduction in sheet capacity because of the abandonment of obsolete equipment in favor of new facilities which are now being built.

It has been estimated that in prewar years the seven western states provided a market for approximately 300,000 tons of hot and cold-rolled sheets exclusive of tinplate and that at the present time this market could absorb at least twice that tonnage.

In the light of the reasons given for the shortage and the increased potential, neutral observers appreciate the basis for the present tight situation.

In seeking relief from the famine, manufacturers have been scouring every nook and corner of Uncle Sam's reputed surplus cupboard, but in general have found it bare. When it was reported locally that 150 tons of galvanized steel sheets were being shipped from a Maritime shipyard to China at the direction of UNRRA, governmental agencies phones were kept busy by irate manufacturers whose warehouses showed more bare floor than sheets.

A local spokesman for the Maritime Commission stated that that shipment was being made on instructions from Washington and was a part of such shipments being through UNRRA. It is reported that UNRRA conducted a methodical survey of all government

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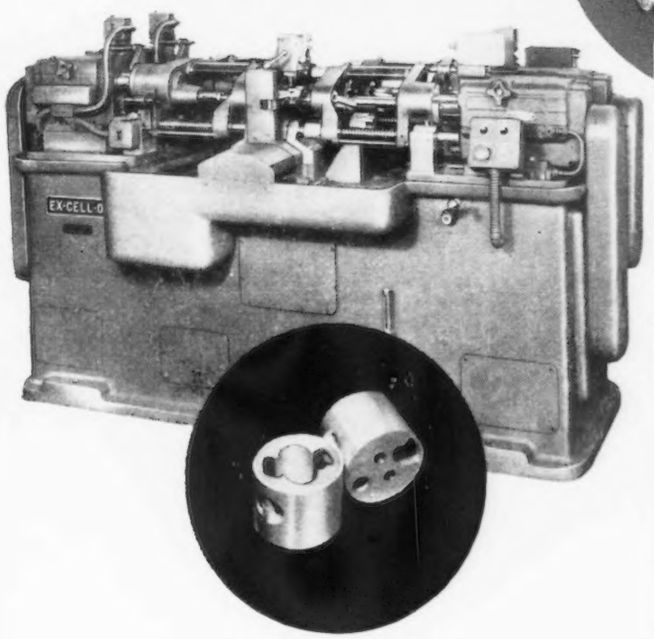

Above: Ex-Cell-O Hydraulic Power Unit Style 28-A.

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To left: Ex-Cell-O Small Style No. 21 Hydraulic Units being used for accurately drilling holes in oil pump bodies. This small unit makes for less floor space. It has all the features of the larger units and can be operated individually or in combination.

Where high production, accuracy, and economy through multiple operations are required, consult EX-CELL-O

Ex-Cell-O Hydraulic Power Units are standard and produced in quantities, but in nearly every case where the unit is used it becomes a part of a special, high production type machine for a specific operation. These units are economical because, as applications change, the units can become a part of the new machine even though entire base is redesigned . . . The units can be mounted on any plane—horizontally, vertically, or angularly—on a temporary or a permanent base, and they can be arranged so that it is possible to use them in connection with guide bars and multiple drill heads . . . Find out today how Ex-Cell-O Special Machines and Ex-Cell-O Hydraulic Power Units can fit your program for today's and tomorrow's production. Write Ex-Cell-O today.

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Standard and Special Multiple Way-Type Precision Boring Machines

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Multiple Drilling and other Special Purpose Machines

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Aircraft and Miscellaneous Production Parts

EX-CELL-O CORPORATION

DETROIT 6, MICHIGAN

agencies in search of sheets 18 gage and lighter some months ago for shipment abroad. Just how much material of this type has already been shipped or is earmarked for such shipment is not known. The Industrial Rehabilitation Div. of UNRRA in Washington, D. C., confirmed the 150-ton shipment and stated that "more" will be shipped to China, but no figures were available which would show tonnages and sources.

The War Assets Corp. is apparently caught in the middle in the search for sheets which might be lying idle in some government-controlled corner. Whenever a friend of a friend of a sheet fabricator sees a pile of sheets in a shipyard or government plant, he is quick to pass on the information to the sheet hungry fabricator who promptly calls upon the WAC to find out "how about it?" It is pointed out by the local office of WAC that they can only sell materials placed at their disposal by one of the government services and that until that is done they can't do very much. In running down many of the alleged stockpiles of "surplus" sheets, it has been found that there are large tonnages in the shipyards at Portland and in the San Francisco Bay area, but the yard operators maintain that the bulk of these sheets are not owned by the Maritime Commission or are needed for ship repairs or conversion still underway.

The San Francisco Office of the War Assets Corp. this week released a list of approximately 1000 tons of low nickel-chromium alloy steel sheets in gages of from number seven to number 18 which was quickly grabbed up in spite of its special analysis.

After surveying all possible sources for "surplus" steel sheets to keep manufacturers going, informed observers draw the pessimistic conclusion that at best these supplies are extremely limited when stacked up against demand.

In shopping around for sheets, manufacturers report that while all of the old line steel companies are in the market to some extent even while giving evidence of withdrawal, they look to Columbia Steel Co.—a western producer of sheets—and to Bethlehem Pacific Coast Steel Corp.—with its Sparrows Point sheet mills—as their best bet.

With present capacities and heavy demand these two plants cannot fill all orders and are booked well into the year even though operating on an allotment basis.

HOWEVER, looking ahead to the fourth quarter, the picture looks a little brighter. Bethlehem expects to have its new 56 in. continuous cold sheet and strip mill at Sparrows Point in operation then and it will produce from 11 gage to 30 gage sheets in unnamed quantities. It is understood that its capacity will approximate that of the old hand mills which it replaces. The new 66 in. hot strip mill going in at Sparrows Point is scheduled for operation early next year and will double the production of ¼ in. to 18 gage material it is reported. Company officials have stated that a large part of the production of both of these mills is to move to the West Coast.

Columbia Steel Co.'s new cold mill at Pittsburgh, which is scheduled for completion about the middle of 1947, is a replacement and its 325,000 ton production will add 241,000 tons to the total quantity of sheets to be available. However, a large portion of this capacity is reportedly slated for tinplate.

Market analysts point out that if Columbia sets aside only 125,000 tons of its new mill's capacity for sheets and maintains its production of approximately 89,970 tons at its Torrance plant, this one company will be in a position to supply approximately 214,970 tons of the estimated 500,000 to 600,000 tons which will be used in the seven western states.

The bright promise of what next year will bring to sheet fabricators is having difficulty in dispelling the gloom occasioned by the present situation, but there is considerable evidence that every effort will be made to see to it that enough sheets are provided to keep shops operating even if only on a starvation diet.

PORTLAND—One of Portland's oldest heavy industrial firms—The Willamette Iron & Steel Corp.—has been purchased by the Guy F. Atkinson Co., contractors and engineers of San Francisco, for $407,000. Purchase price includes the main plant and physical properties.

Wisco was founded early in this century and specialized in manufacture of logging machinery for many years. During World War I it operated a shipyard and later produced earthmoving equipment. Shipbuilding and repair again became the most important phase of the company's business during World War II and lately the shops have been engaged in the assembly of locomotives for shipment to Russia.

The plant properties purchased include 10 acres of land, 16 buildings, 500-ft long dock, machine tools, yard locomotives and cranes and automotive equipment. Adjacent property leased from the Defense Plant Corp. is not involved in the sale.

The Atkinson company has owned a large share of the Wisco stock since 1941.

All present contracts of Wisco will be carried through by the new management it is reported. G. W. Wintz will become acting manager and J. J. Nunn, acting chief engineer, when the new organization takes over in March. The only change in name is alteration of "corporation" to "company," and business will be done under the name of Willamette Iron & Steel Co.

BOBBI-KAR: *Subject to OPA approval this car is expected to sell for* $500. *To be manufactured by Bobbi Motor Car Corp., San Diego, the car has an overall length of* 132 *in. with an* 80-*in. wheel base.*

Assembling Gears on Camshafts

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MULTIPRESS

THERE'S nothing better than *smooth, exactly controlled* hydraulic power for—among hundreds of other tasks—assembling gears on shafts . . .

MULTIPRESS provides that kind of power, *in a streamlined package so remarkably compact, efficient, versatile and economical* as to be a minor miracle in the machine tool field!

Results gained with MULTIPRESS in action right on the production line, as in the typical installation at left, prove this point.

Built in 4, 6, and 8-ton sizes, MULTIPRESS offers fully regulative ram pressures from 300 pounds to capacity. Ram strokes are adjustable from 1/32 of an inch to capacity. The 4-ton unit, for example, offers a full six-inch maximum stroke, weighs only 725 pounds, measures only 34 inches high and 16 inches wide, applies up to 8000 pounds pressure at 200 ipm downward, and delivers upward pressures up to 5000 pounds!

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At the John J. Hart Company, Brooklyn, MULTIPRESS assembles gears on camshafts with speed, accuracy, and economy.

A FEW OF THE COUNTLESS TYPES OF OPERATIONS MULTIPRESS DOES BETTER AND FASTER

DRAWING

At the Buckeye Stamping Company in Columbus, Ohio, MULTIPRESS blanks and draws a complete metal container with each complete stroke of the ram!

TRIMMING

At the Universal Castings Corporation in Chicago, MULTIPRESS cuts trimming costs on aluminum, bronze and brass castings of close tolerance and high finish.

SLOTTING

Punching key slots in safety razor guards at Gillette's South Boston plant, MULTIPRESS cuts press "down time," boosts production, and reduces noise level.

MOULDING

Ceramic radiants formed by MULTIPRESSes at the American Clay Forming Company, Tiffin, Ohio. MULTIPRESSes increased production and reduced kiln loss.

STAMPING

At the American Electronics Corporation at Columbus, Ohio, small metal lugs are blanked and formed at high speed and low cost by specially tooled MULTIPRESSes.

Another unique MULTIPRESS *feature is the amazingly wide range of* standard *fixtures, tools, controls and accessories that can be attached quickly, easily and economically to the ingeniously designed* MULTIPRESS *frame. These include automatic cycling controls, straightening fixtures, indexing tables, controls for rapid ram traverse and adjustable pressing speed, benches, bolsters, extension tables, and a host of others! Get the complete* MULTIPRESS *story . . . Write today!*

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EQUIPMENT *in* APPLIED
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European Letter . . . JACK R. HIGHT

• Partitioned Germany policy showing expected results on recovery of basic functions . . . Stockpiles of raw materials at plants nearly exhausted . . . Production grinding to halt.

FRANKFORT-AU-MAIN — A glimpse into a German metal fabricating plant today is the best proof that can be had of the "chickens" of Allied policy "coming home to roost." Current status of the Vereinigte Deutsche Metallwerke plant at Heddernheim just outside Frankfort is one of small production and big hopes for the future. Before the war a large exporter of nonferrous sheets, strip rod and tubes, the firm has been content in recent months to do a little work for the American Army, and is now beginning the production of a few consumer products.

Similar to the raw material situation in France and in some sections of Belgian industry, operations, although at present on a scale about equal to 5 pct of prewar capacity, are actually grinding to a halt. There is no flow of any of the raw materials essential to steady production at any level at the present time, and the German managing director is naturally quite anxious to see some materials come in. Operations that have been carried out thus far have been almost entirely in aluminum, with stocks that were on hand when the war ended, and considerable quantities of aircraft scrap that the management has been able to procure locally. There is as yet no transportation system capable of bringing in quantities of such material from other sources.

Most of the business which the firm has done with the Army has been in steel-aluminum cable for electrical systems, which was a specialty in this works. Currently the plant manager is contending with a typical example of the outcome of partition of Germany. Months ago he was ordered by the American Army to produce a special cable job for reconstruction use, which was to be delivered by the end of last year. The manager confesses that the cable was not delivered on time, as a matter of fact he has not started to produce it. Without going into the rights or wrongs of the situation, the astute German manager's position is that he asked for raw materials from the British zone to complete the job, and he never got the materials. There is at present a quiet struggle going on between the manager and the pertinent military government official as to whether or not he actually has enough material on hand to do the job or not. There is certainly no doubt, however, that the stocks on hand at this works are very slim in comparison to last September. According to the best figures available, about 87 pct of the aluminum which was on hand here at this works in September has been consumed, and other metals show similar reductions.

IN addition to the production of major items like the electrical cable, a big local Army business is being carried on in sheet aluminum for winterizing jeeps. A healthy respect for the German winter on the part of most GI's has made the closed club coupe model definitely preferable to the usual touring sedan. All business done by the firm for the occupying forces is strictly on a requisition basis.

Consumer lines which the firm are getting underway include die cast pots and pans, wheels for toys, roofing, keys and household food grinders. All of these products are being made in aluminum, again because there is no other material on hand to use. It seems evident from a tour of the plant and a conversation with the manager that production in these lines is being held down deliberately, in the hope that some general stabilization of the currency situation will make their sale more profitable.

Roofing in both aluminum and copper were specialties here in prewar years, and considerable effort is being directed to the development of roofing lines. Two types are being made in aluminum at the present time, with most of the production being centered on a flat sheet, with a corrugation at about 10 in. intervals. Another type, with a pyramidal surface, similar to that of the automobile running boards of earlier days, is also being used.

According to the word of the manager, the plant, which is paying 20 pct of the men it used before the war and operating at 5 pct of capacity, is costing about 30,000 marks per week to keep open. The firm remains so far in private hands, and apparently is destined to stay that way. Some concern is expressed by the management of the firm about the future of a 15,000 ton hydraulic press which is

Starvation Question

Memo from a foreign correspondent to his editor:

I can't remember at the moment, is Senator Wherry of Nebraska up for re-election this year?

Conversation piece at every press camp in Germany this week is the Senator's statement about the policy of starving Germans. There is a lot of divergent opinion here on what is wrong with the handling of Germany, but virtually no one in Germany today thinks that the people in any sector are starving.

NOW "National" offers High Tensile Fastenings for

INSTALLATION OF INSERT WITH LOCKING RING
1. Drill, counterbore and tap
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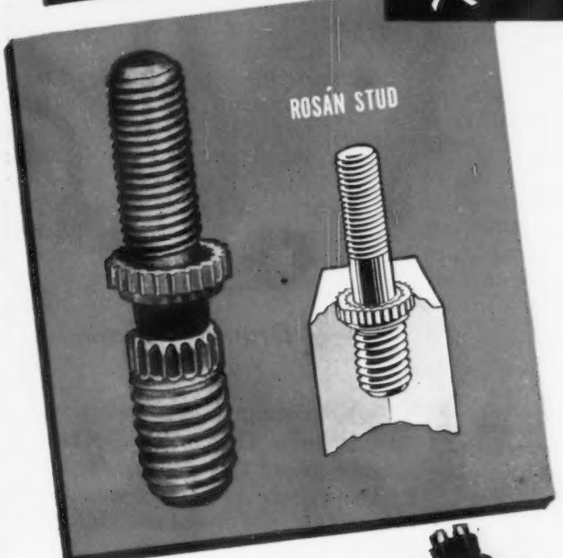


The tendency of fastenings to work loose under vibration or torque is overcome by the Rosán Locking System for inserts and studs, now made by National Screw & Mfg. Co.

Rosán Fasteners may be molded in, or easily installed in parts after forming. The entire design is based on a simple serrated ring which locks either an insert or stud in position, and so prevents loosening or turning by any stresses on the connecting unit.

Securely locked in place, a Rosán Fastener gives a long wearing, high strength tapped hole or a firmly anchored projecting stud. It can be removed by drilling without disturbing the parent material.

Send for samples and full information on these revolutionary new fasteners, already adopted by leading aircraft companies and other industries.

(Patents issued and pending, U. S. A. and foreign countries)

National HEADED AND THREADED PRODUCTS

THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.

the pride and joy of the plant.

From the conversation it is evident that the managers showed the press off with considerable satisfaction when each Allied technical team went through the plant gathering data, and the result is that the press has been declared available for reparations. It is being carefully pointed out by the managing director now that although it did a magnificent job for them, it is so specialized to their needs that it is doubtful if it would be worth moving. He describes the adaptations that would be necessary for use in any other country, and makes no effort to conceal the fact that he wants to keep it.

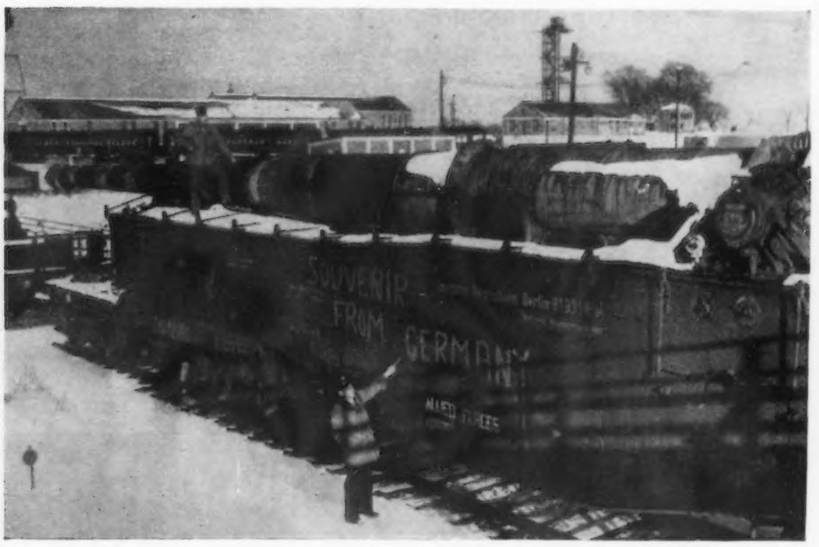
Typical of the problems of doing business in a partitioned Germany was the explanation of the firm's plight with regard to needed repairs for a rolling mills. To get the new set of rolls required after the breakdown, it will be necessary to make a purchase in the British zone. In some respects this operation with the British zone is more simple than doing business in either of the two other occupying zones, but it is still necessary for the firm to ascertain if the possible supplier is back in business at the old stand, and if he is in position to take on any new orders. Then application must be made to the American military government to approve the purchase. After the local approval is granted the order wends its way up through channels to the top of the American organization, over to British headquarters, and sifts its way down to the proper level, where it may or may not be deemed wise. Probably the shortage of raw materials in Germany today is preventing more widespread dissatisfaction with the operation of the military government. If the materials were available to work with, more firms would be finding themselves hampered by the cumbersome system.

Ends London Connection

London

• • • **The withdrawal of H. A.** Brassert, chairman of H. A. Brassert & Co., Ltd., London, from the company in order to concentrate his activities in his New York company has resulted in the transfer of the engineering activities of the London firm to John Miles & Partners (London), Ltd. The new company succeeds to the drawings patents and processes of the former company and will act as consultants on the layout, design and construction of plant and equipment and on the methods and processes of operation in all branches of heavy engineering. John Miles is chairman and managing director of the new company.

GERMAN GUN STUDY: *The German Krupp-made 28 cm K5-E gun that can fire a rocket-assisted projectile more than 50 miles has arrived at Aberdeen, Md., for study by U. S. Army arms experts and eventual public exhibition.*



Chemists Will Discuss Nuclear Applications

New York

• • • **Sessions dramatizing** the impact of atomic power upon civilization will feature the 109th national meeting of the American Chemical Society which will be held in Atlantic City, N. J., April 8 to 12.

The program will include a broad survey of nucleonics, the new field of scientific endeavor dealing with the release of energy from the nucleus of the atom, under the chairmanship of Dr. Glenn T. Seaborg, co-discoverer of plutonium, one of the atomic bomb's bases, and also of elements 95 and 96.

Nuclear power's far-reaching implications for mankind will be emphasized by an exhibit, the first of its kind ever staged, on the harnessing of this new form of energy, its use in the atomic bomb and its potential service in science and industry.

Peacetime applications of many other wartime advances will be discussed. Developments in plastics, petroleum, rubber, food, gas and fuel, medicinal chemistry, education and other fields will be reported in the several hundred papers to be presented.

Steel Drums for Sale

Washington

• • • **Foreign Liquidation** Commissioner Thomas B. McCabe has announced the offering for sale in the Pacific area of a quantity of 289,000 used 55-gal steel oil drums. Of this total 250,000 are 16 and 18 gage, condition undetermined, in Finschafen and Biak, New Guinea. There are 28,000 18-gage drums in good condition in San Fernando, Luzon, P. I.; 6000 16-gage in good condition located in Noumea, New Caledonia, and 5000 18-gage in good condition on Guadalcanal.

Additional used drums are expected to be declared surplus in the Pacific at a later date. Interested buyers should contact John K. Howard, Field Commissioner for the OFLC at the National City Bank Bldg. in Manila. Mail address: Hdqs. FLC, APO No. 707, c/o Postmaster, San Francisco.

● The widespread use of triple-alloy steels containing Nickel, chromium and molybdenum is based on extensive experience in widely divergent engineering fields.

It has been found that they can be counted on for consistent performance. The depth to which full hardness is developed is comparable to that attained by other alloy steels. Their response to heat treatment is dependably uniform.

Moreover, the wide range of compositions available, makes it possible to select *accurately* suitable alloy steels for a broad range of applications.

Inquiries regarding the selection and uses of triple-alloy steels containing Nickel are invited.

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PERSONALS

o o o

• **Louis J. Reed** has been appointed assistant chief engineer of Jones & Laughlin Steel Corp., Pittsburgh. He has been associated with J & L since 1926, starting as assistant chief engineer of the Aliquippa works. In 1935 he became assistant superintendent of the tinplate dept. leaving that position to enter the Coast Artillery in 1943. **Julius E. Graf,** also assistant chief engineer, will retain the same position upon his return from Germany where he is serving as chief engineer of the metallurgical branch of the Economics Div. of the U. S. Control Commission.

• **Jack Carlson** has been named Seattle district sales manager for Kaiser Co., Inc., Iron & Steel Div., and will work under the direction of Fred Lord, northwest area manager. Before joining the Kaiser organization, he had been affiliated with Inland Steel Co.

• **A. F. Dobbrodt** has been appointed special products engineer to head a new division of that name in Carboloy Co.'s general sales dept., Detroit. Mr. Dobbrodt has been with Carboloy since 1929, his activities covering design, sales, and servicing of Carboloy tools. He has been successively sales and service engineer in Milwaukee, Rochester, and Cleveland, Southern district manager and Pittsburgh district manager.

• **A. T. Marchuk** has been appointed production manager of Athey Products Corp. of Chicago. He joined the Athey organization in 1936.

• **Dr. R. C. Gibson** has returned to his former position as director of research with the Parker Rust-Proof Co., Detroit. **Dr. E. W. Goodspeed,** former assistant research director, is now assisting in the office of the president, and **H. J. Lodeesen** has been promoted to the position of assistant research director. **Dr. George A. Baumstark,** formerly with the Firestone Tire & Rubber Co., **Richard I. Somers,** formerly with the Willow Run bomber plant, and **Amos R. Anderson** and **Charles G. Neuroth,** workers on the atomic bomb project with the Houdaille-Hershey Corp., have joined the research staff of the company.

• **William P. Spofford** has been appointed eastern manager for the Engineering Works Div. of Dravo Corp., with headquarters at Wilmington, Del. In his new position, Mr. Spofford will be responsible for the administrative management and operation of the Wilmington yard. **Richard D. Anderson** has been made plant superintendent at Dravo's Wilmington yard and **S. E. Anderson** has been appointed personnel manager there. **D. R. Berg,** administrative manager at the Wilmington shipyard, has been appointed secretary of the sales committee of Dravo Corp. at Pittsburgh, where he will make his headquarters.

• **Eugene E. Gloss** has been designated as service manager of ball bearings, New Departure, division of General Motors Corp., with headquarters at Bristol, Conn. He succeeds **Harold R. Goodale** who resigned to go into private business. **Seth H. Stoner** has been appointed assistant chief engineer in charge of automotive and tractor applications of the New Departure Div. Previous to the war he was New Departure's executive engineer, but since 1941 has been on leave with the Navy.

• **Charles E. Hart** has been re-elected president of the Chase Brass & Copper Co., Inc., Waterbury, Conn. Vice-presidents re-elected were: **Robert L. Coe, Richard D. Ely, J. R. Van Brunt, Wallace C. Husted** and **Fred A. Jackle.** Also re-elected were **Seymour S. Jackson,** secretary, and **John H. Gilbert,** treasurer. Assistant secretaries re-elected were: **Rodney Chase, E. H. Madison,** and **C. K. Lenz,** while **Walter L. Smith,** former plant superintendent of the company's Cleveland mill, who succeeds Mr. Jackle as general works manager of the Chase Metal Works plant, has also been elected an assistant secretary. **Louis J. Schuster** and **V. W. Heyden** were re-elected assistant treasurers.

• **R. W. Burton,** former assistant to the manager of the Jones & Laughlin Steel Corp.'s Detroit warehouse, has been appointed manager of Jones & Laughlin Steel Service, Inc., New York. He succeeds the late **H. B. Royer.** Starting his career as an office boy in the J & L Chicago warehouse in 1928, Mr. Burton rose rapidly and was placed in charge of purchases at the firm's Detroit warehouse in 1934.

• **S. Floyd Stewart** has been elected vice-president in charge of engineering of the Leece-Neville Co., Cleveland. Mr. Stewart joined Leece-Neville as a research engineer in 1936, becoming chief engineer in 1941.

• **F. J. Hoenigmann** has resigned as executive vice-president and general manager of Cribben & Sexton Co., Chicago. He joined the company in 1930 as sales manager.

• **James MacBeth, Jr.** has been appointed manager of sales of the newly established Furnace Products Div. of Carnegie-Illinois Steel Corp., Pittsburgh. The new division will handle the sale of pig iron, ferromanganese, spiegeleisen, and coke. Mr. MacBeth was manager of pig iron sales for Jones & Laughlin Steel Corp., with whom he had been associated for 30 yr, prior to his joining the Carnegie-Illinois Steel Corp. sales dept. in July of last year.

• **William O. Anshutz** has been elected president of Cincinnati Steel Treating Co., Cincinnati, succeeding **Byron Small,** who has retired because of ill health. Mr. Anshutz was vice-president and is connected with Cincinnati Gear Co. **Paul W. Christensen** has been re-elected chairman of the board and **Jess Daugherty,** formerly secretary-treasurer, has been elected vice-president, with **Steen Sorensen,** secretary-treasurer.

• **George L. Draffan,** who was executive vice-president of Ohio Brass Co., Mansfield, Ohio, since 1938, has been elected president of the company succeeding **Charles K. King,** who becomes chairman of the board and the executive committee.

J. W. KELLEY, chairman of the board of directors, J. W. Kelley Co., whose appointment was announced in the Feb. 7 issue.

• **Robert L. Heath,** manager of the St. Louis office of the Climax Molybdenum Co., will be in charge of the company's metallurgical service to the railroads. Before coming with Climax, Mr. Heath was chief metallurgist of Allison Div. of General Motors Corp. After April 1 his headquarters will be at the Chicago office.

• **Henry H. Troger** has been named chief production planner of Federal Shipbuilding & Dry Dock Co. at Kearny, N. J., a U. S. Steel Corp. subsidiary. He succeeds **Frank A. McMillan** who has been assigned to special duties. **Philip J. Jackson** has been named assistant hull superintendent; **Lewis R. Chapman,** assistant to the general superintendent; **John J. Lawrence,** assistant outfitting superintendent; and **Spencer S. Greenwood,** foreman of the machine shop.

• **Karl E. Vogel,** executive vice-president and general manager of the Omaha Steel Works, Omaha, Neb., has retired from the firm.

• **Creston E. Kite** has recently resigned from E. F. Houghton & Co., Philadelphia, to become associated with the General Alloys Co., Boston, as assistant to the president.

• **Carl J. Snyder** has been appointed general staff master mechanic of Chrysler Corp., Detroit, succeeding **D. F. Flater,** resigned.

• **Robert S. Crawford** has been named roll shop superintendent of rolling mills at Timken Roller Bearing Co., Canton, Ohio, succeeding **Eugene Mall,** who has resigned. At the time time, **Burke B. Denison** has been promoted to general foreman of the Steel & Tube Div. of the Canton plant.

• **W. C. Connelly** has been reelected president and general manager, Ohio Seamless Tube Co., Shelby, Ohio, and **E. W. McNeill,** vice-president and secretary-treasurer. Other officers recently elected include: **Aaron Waines,** vice-president and manager of sales; **H. C. Mayer,** vice-president and works manager; and **C. C. Watters,** assistant secretary-treasurer. Board members elected to serve during 1946 include: **W. C. Connelly, J. A. Anderson, W. C. Dunn, C. C. Fish, R. T. Green, E. W. McNeill, H. M. Mayer, George E. Ritchie, Jr.,** and **Aaron Waines.**

• **H. B. Jorgensen** has been appointed comptroller of Wallace Supplies Mfg. Co., Chicago, and will have charge of the firm's personnel, finance, accounting, purchasing, and office management activities.

• **J. W. Patrick, Jr.** has been appointed manager of warehouses for Follansbee Steel Corp., Pittsburgh. Mr. Patrick has been with Peter A. Frasse Co., Inc., New York, for 15 yr and was manager of the Philadelphia branch at the time he joined Follansbee.

• **J. E. Gulick** has been named general manager of the Tire Manufacturing Div. of the B. F. Goodrich Co., Akron, Ohio. Mr. Gulick, who succeeds **A. W. Phillips,** resigned, will direct all tire manufacturing operations of the company in the United States. General superintendent of the De-Icer and Fuel Cell Div. since 1941, he had directed technical development and production of vast quantities of these vital war materials in the company's plants throughout the country. **Robert D. Franklin** has been appointed manager of the textiles, cotton, advertising and paper products dept. of the B. F. Goodrich Purchasing Div., succeeding **M. N. Twyman,** who has established his own business in Wilmington, Ohio.

WILLIAM W. COUTTS, executive vice-president, Gray Iron Founders' Society, Inc.

• **William W. Coutts** has been appointed executive vice-president of Gray Iron Founders' Society, Inc., Cleveland, succeeding **W. W. Rose,** who has retired because of ill health. Mr. Coutts was formerly assistant secretary of the National Screw Machine Products Assn.

• **Don R. Woolf** has been appointed chief blade design engineer of Curtiss-Wright Corp., Propeller Div., New York. He joins the Curtiss-Wright organization after being chief engineer of the American Propeller Corp. for 3 yr. Before that he was project engineer and later assistant chief engineer of the Lycoming Div. of the Aviation Corp.

• **H. G. LeMaire,** formerly area superintendent of the Willow Run Div. of the Ford Motor Co., has been appointed production manager of the L. C. Smith Gun Co., Inc., a division of the Marlin Firearms Co., Fulton, N. Y.

• **Thomas C. Barber** has been appointed exclusive distributor in Northern Illinois, Southern Wisconsin, Iowa and Northwestern Indiana for torque control couplings manufactured by Buffalo Machinery Co., Inc., Buffalo.

• **Fred J. Tobias,** research and metallurgical engineer, has joined Advance Pressure Castings, Inc., Brooklyn.

• **George G. Johnson,** formerly clerk and assistant treasurer, has been named general manager of the Los Angeles plant of the Johnson Steel & Wire Co., Inc., and **Gerald R. McClure,** office manager at the Worcester plant, has been elected clerk of the corporation to fill the vacancy created by Mr. Johnson's advancement. The announcement, as stated in the Feb. 7 issue, was incorrect.

• **Frank G. Shaub** has been appointed by Chambersburg Engineering Co. as Detroit representative. Mr. Shaub has been with Ford Motor Co. for many years, specializing in the maintenance of steel mill and forging equipment and forging die development.

• **Meade Johnson,** assistant manager of contract hardware sales, has been appointed marketing manager of the Yale & Towne Mfg. Co., Stamford, Conn. **Frank Boxwell** has been named manager of builders' hardware sales, a position representing a realignment of several departments. **R. T. Mitchell,** former manager of contract hardware sales, has been transferred to Washington to handle the federal government's builders' hardware contracts with Yale. **V. A. Waldron,** who has just returned to the company after serving in the Navy, has been assigned the New England sales territory. **John Meyer** has been made Yale's hardware salesman for Kentucky and Tennessee, with headquarters at Nashville, and **George Cannon** has been appointed hardware salesman for the state of Michigan and will make his headquarters in Detroit.

• **J. B. Wagstaff,** general sales manager for DeSoto since 1936, has been elected a vice-president of that division of Chrysler Corp., Detroit. He will continue to direct its sales activities.

• **Charles G. Crabb,** former advertising manager of the Wrought Washer Mfg. Co., Milwaukee, and assistant manager of the Postwar Planning Div. of the Milwaukee Assn. of Commerce, has been appointed head of that division to succeed **Kenneth W. Haagensen,** recently appointed head of public relations at Allis-Chalmers Mfg. Co., Milwaukee.

THEODORE HERMAN, manager of claims, Bethlehem Pacific Coast Steel Corp.

• **Theodore Herman** has been appointed manager of claims for Bethlehem Pacific Coast Steel Corp., San Francisco. He has served in various capacities in the operating, claims and contract terminations dept. in Bethlehem, Pa., and was assistant manager of claims there for 4 yr.

• **Leo B. Pambrun** has joined the advertising dept. of Stewart-Warner Corp., Chicago, as assistant advertising manager in charge of the Radio Div. Prior to his enlistment in the Marine Corps, he was assistant advertising manager of the Crosley Radio Corp.

• **Ross Allen** has been appointed to head the forecasting and budget control dept. of Southern States Iron Roofing Co., Savannah, Ga., and **Martin C. Delaney** has been made secretary and treasurer of the company.

• **Alice D. Prigg** has been appointed purchasing agent for the Washington Steel Corp., Washington, Pa.

• **Sir William Larke** is retiring from the position of director of the British Iron & Steel Federation, London, on Mar. 31. He was appointed director of the National Federation of Iron & Steel Manufacturers in 1922 and has been associated with the organization of the industry since that date.

• **Bert Conway,** who was formerly vice-president in charge of manufacturing of the Aviation Corp. during the past 3 yr, has become associated with Joseph W. Rothmeyer of Detroit.

• **Lt. Col. Harold N. Hill** has been appointed manager of railway sales for Gulf Oil Corp., Pittsburgh. Col. Hill, widely experienced in the field of railroad lubrication and fuels, will direct sales of the complete line of Gulf products for railroad consumption.

• **Philip Fishman** has been appointed sales manager of the Still & Sterilizer Div. of the Aetna Scientific Co., Everett, Mass. He has previously been with the General Electric Co. in various engineering capacities for 8 yr.

OBITUARY...

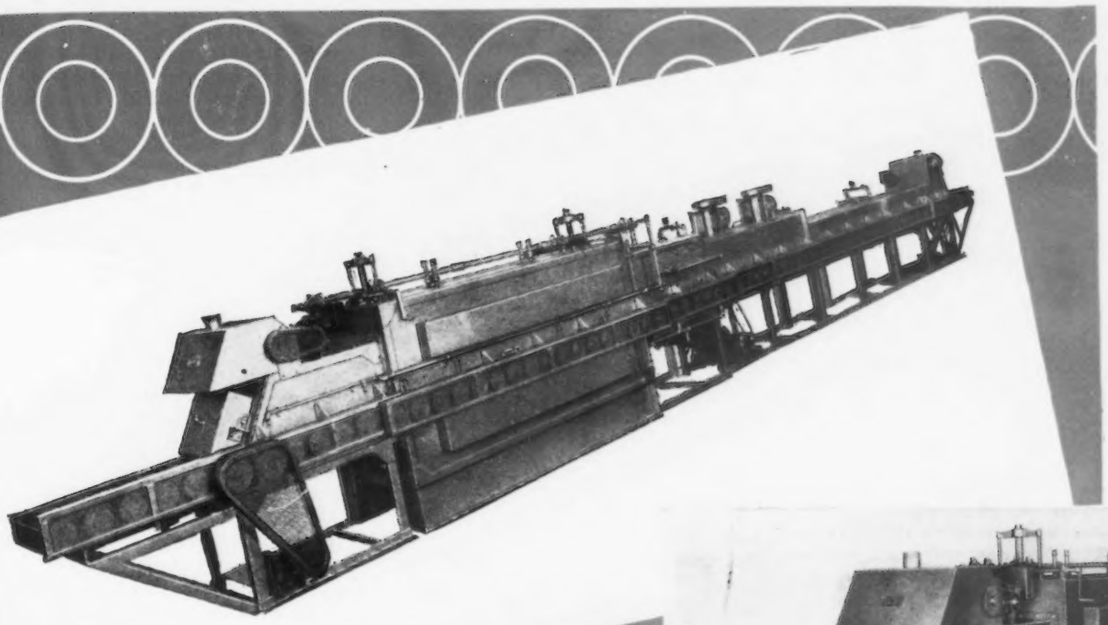
• **Henry W. Seldon,** an executive of the Universal Cyclops Steel Corp. of Bridgeville, Pa., died recently after a lingering illness. A metallurgist, Mr. Seldon was formerly with the Cambria Steel Co. before becoming associated with Universal Cyclops.

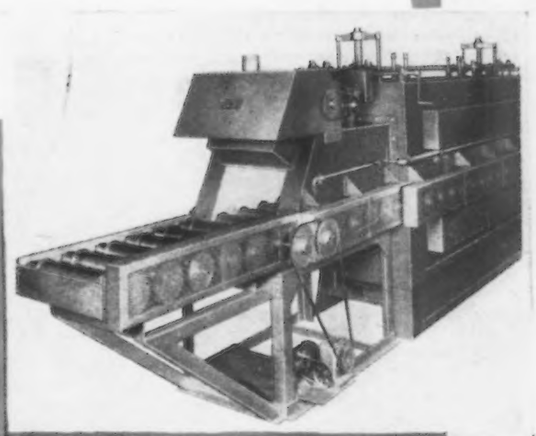
• **William R. Werther,** assistant chief metallurgist of Algoma Steel Corp., Ltd., Sault Ste. Marie, Ontario, died Feb. 4.

• **Samuel Shafer, Jr.,** 67, head of the patent dept. at Chain Belt Co., Milwaukee, died Feb. 4 in a hospital there after a long illness. He had been with the company for 42 yr.

• **Howard G. Tallerday,** 63, recently retired chairman of the board of Western Pipe & Steel Co., died recently in San Francisco. Mr. Tallerday became associated with Western Pipe & Steel Co. soon after its founding in 1907, first as a salesman in the Los Angeles territory, and in 1918 was transferred to the San Francisco operation.

• **John W. Sutton,** 54, associated with the sales organization of Hamilton Steel Co. for the past 15 yr, died Feb. 8 in Cleveland.





THE LINDBERG *Roller Hearth* FURNACE

Brazes Heavy Loads Efficiently by Continuous Production

Designed to handle economically work too heavy for mesh belt types, the Lindberg Roller Hearth Continuous Production Brazing Furnace accommodates loads up to 2500 net pounds per hour.

With an effective temperature range from 1300°F. to 2500°F., this furnace does bright annealing, low temperature silver brazing and sintering of powder metals. A variable speed drive and special input control meet the heating requirements of each. A selection of controlled atmospheres is available to handle any brazing, sintering or heat treating operation.

The AT type Globar heating elements and the hearth rollers of alloy for 2100°F. maximum, or silicon carbide for 2500°F. maximum temperature, may be changed from outside without cooling the furnace down. Production delays are eliminated.

Both charge and discharge doors of the furnace open and close automatically. Gas flame curtains in front of and immediately below each door prevent oxidation and discoloration of work.

In the atmosphere-filled cooling chambers work is cooled at the most efficient rate since temperature level and flow of water in the water jacket are automatically controlled.

Let our engineering and research staffs find ways in which this furnace can handle your heavy work quicker, better and at lower cost.

LINDBERG ENGINEERING COMPANY
2452 WEST HUBBARD STREET, CHICAGO 12, ILLINOIS

LINDBERG *Furnaces*

SUPER-CYCLONE • CYCLONE • HYDRYZING • BRAZING

Dear Editor:

GERMAN POWDER MACHINE

Sir:

In November you advised that the German method of producing "high-grade powder metals directly from the liquid phase" will not be available for publication before two months. We should appreciate it if you would advise whether this article has become available for publication and where we could get a copy of it.

R. H. RODRIAN
Technical Dept.
Geo. S. Mepham Corp.,
East St. Louis

● We have been endeavoring to obtain this report from the Commerce Dept. in Washington, which is processing a considerable amount of good technical information, but until it is formally released, no paper is permitted to publish the material. When it does become available, it will appear in THE IRON AGE.—Ed.

SEAMLESS TUBING

Sir:

Has the article "Precision Seamless Tubing by Electrodeposition" which appears in the Jan. 10 issue, been reprinted? We would appreciate receiving three copies if possible.

O. J. SEEDS
Cerro de Pasco Copper Corp.,
New York 5

● We did not reprint the article, but are forwarding tear sheets.—Ed.

BERYLLIUM COPPER

Sir:

In the Apr. 26, 1945 issue there appeared an article "Beryllium Copper—A Review of Its Properties." We would appreciate receiving two copies of this.

ALFRED G. DENNISON
Riverside Metal Co.,
Riverside, N. J.

● Copies have been sent.—Ed.

ADVERTISING ERRORS

Sir:

Automatic Transportation Co. wishes to correct two errors in their advertisement in the Feb. 14 issue of THE IRON AGE. The statement, "Only Transporter has this Front Wheel Power Drive" should have read, "All Transporters have this Front Wheel Power Drive." In the following statement, "The Transporter is the only material handling electric truck that provides maximum power for a full day's hauling and yet uses only an ordinary light socket for 5 hour recharging," the phrase "5 hour recharging" should have read "8 hour recharging."

RUTHRAUFF & RYAN, INC.
Chicago

PLANT DISPOSALS

Sir:

Have you reports of any instances where a small manufacturer has leased equipment from the RFC since they took over the SWPC?

FRANK FOUNDRIES CORP.
Moline, Ill.

● No public information has been released on plant disposals by RFC since demise of SWPC. See THE IRON AGE, Oct. 4 issue, p. 115, for previous plant leasing in the metal industry.—Ed.

AUTOMATIC SCREW MACHINES

Sir:

Please send us a reprint of "Setup Charts For Automatic Screw Machines." We are enclosing 60¢ in stamps to cover cost of same.

LOUIS WOZAR
United Aircraft Products, Inc.,
Dayton

● Reprint has been sent.—Ed.

PRECISION CASTING

Sir:

We would appreciate receiving tear sheets of the article "Precision Casting With Plastic Patterns" by Charles T. Post, which appeared in the Nov. 15, 1945 issue.

GRETA HOOGLAND,
Assistant Secretary
American Brake Shoe Co.,
Mahwah, N. J.

● Tear sheets have been mailed.—Ed.

BALING SHAVINGS EQUIPMENT

Sir:

Please furnish us with the names of manufacturers of equipment for baling shavings.

W. A. KENYON
General Products Co.,
Houston, Tex.

● A list of several companies has been forwarded.—Ed.

COMPARISON CHART

Sir:

We would be interested in receiving a copy of your "Metals and Alloys Comparison Charts" in the Mar. 30, 1944 edition.

LOUIS T. FRIEDMAN
Metallurgist
Eastern Metal Products Co.,
Tuckahoe, N. Y.

● Copy has been sent.—Ed.

STEEL ROOFING STYLE MACHINE

Sir:

Prior to the war I had some correspondence with a Cleveland manufacturer who produced a machine which formed "V-Crimp" or other styles of steel roofing. The machine was fed from its end, using coiled stock, if available. I believe that the manufacturer advertised in your publication, and would appreciate it if you can give me the name and address of this Cleveland concern.

R. A. CHILDERS
1412 George Mason Drive,
Arlington, Va.

● It's the Yoder Co., 5500 Walworth Ave., Cleveland 2.—Ed.

LEAD-BEARING STEELS

Sir:

Some months ago you stated that the manufacture of lead-bearing steel in the U. S. A. had ceased except in one manufacturer's plant where such steel was being made against a British order. We are very interested as users in the production possibilities offered by such steels, and some small scale experiments carried out in our works have given very promising results. We should be very glad if you would let us have some further information.

Does the cessation of manufacture in the U. S. A. apply to lead-bearing carbon steels and to lead-bearing alloy steels as well? It would be valuable to have a statement from you of the main reasons for the abandonment of the project in the country of its origin.

A. CRAIG MACDONALD
Metallurgist
Albion Motors Ltd.,
Glasgow, Scotland

● Our original statement on lead-bearing steel and the fact that it is made in very limited quantity in this country applied to both carbon and alloy steels. The reason for the great drop-off in the making of these steels is due to the fact that the mills can never get a price differential high enough to justify the added work and precaution that is going to be demanded by their production.—Ed.

DESCALING STEEL

Sir:

We are quite interested in the article on "Sodium Hydride Process for Descaling Steel" by J. Albin, published in the Nov. 8, 1945 issue of your magazine, and we should like to have tear sheets of this article.

ROBERT NEIMAN
Director of Research
Whip-Mix Corp.,
Louisville 8

● They are on the way.—Ed.

GERMAN STAINLESS STEEL

Sir:

We would appreciate your sending us three copies of tear sheets for the article "German Stainless Steels" appearing in the Dec. 20, 1945 issue.

C. A. KLEIN
Metallurgist
Crucible Steel Co. of America,
Syracuse, N. Y.

● Copies have been mailed.—Ed.

WHEELABRATORS

Proved by Performance

in nearly 3000 plants

2-10 MACHINES USED BY 322 PLANTS

10 MACHINES

USED BY
Owens-Illinois Can Co.
Auto Specialties Mfg. Co.
Cleveland Graphite Bronze Co.
Unitcast Corp.
Dayton Mall. Iron Co.
Walworth Company

11 MACHINES

USED BY
American Brake Shoe Co.
Packard Motor Car Co.
Ohio Rubber Co.
U. S. Steel Corp.
A. O. Smith Corp.
Allis-Chalmers Mfg. Co.

12 MACHINES

USED BY
American Radiator and Standard Sanitary Co.
Goodyear Tire & Rubber Co.
Eastern Mall. Iron Corp.
Kelsey-Hayes Wheel Co.
Crucible Steel Co. of America

14-20 MACHINES

USED BY
Bendix Aviation Corp.
Campbell, Wyant & Cannon
Magnus Metal Division Associated Spring Corp.
Wyman Gordon Co.
Spicer Mfg. Corp.

20-25 MACHINES

USED BY
Thompson Products, Inc.
Borg-Warner Corp.
Firestone Tire and Rubber Co.
Eaton Mfg. Co.
B. F. Goodrich Co.
U. S. Government

25-50 MACHINES

USED BY
International Harvester Co.
General Electric Co.
Timken Roller Bearing Co.
National Mall. & Steel Cstgs.

50-173 MACHINES

USED BY
General Motors Corp.
Chrysler Corp.
Curtiss-Wright Corp.
Ford Motor Company

THE WHEELABRATOR
WHAT IT IS AND WHAT IT WILL DO

New, informative book gives complete, concise information on all phases of airless blast cleaning. Included are descriptions of the Wheelabrator principle and mechanism; types and sizes of machines; list of typical products Wheelabrated; types of finishes; performance data; and a wealth of other information. Ask for Catalog No. 74

American
FOUNDRY EQUIPMENT CO.

510 SOUTH BYRKIT ST.
MISHAWAKA, INDIANA

This Industrial Week . . .

- **Confusion Reigns in Steel Industry**
- **Steel Deliveries to Be Delayed**
- **Ingot Rate Rises to 25 Pct**

DIFFICULTIES involved in returning struck steel plants to operation, coupled with uncertainty as to price advances for specific steel products, kept both operating and sales depts. of the steel industry in confusion this week. Little finished steel was produced in the early part of the week as mills awaited coke-oven gas necessary for operation of soaking pits and accessory heating equipment.

In only one respect were steel mills by mid-week better off than before the strike. Scrap supplies accumulated at holding points outside of steel mills raised available scrap inventories to the highest point in months. After operations are stepped up, however, this accumulation will dwindle rapidly. It is expected that after full production is obtained, scrap supplies will be tight for several months.

NO steel deliveries of consequence were expected to be made until the announcement of new prices. Steel companies this week notified their customers that the price advance was effective Feb. 15. Until the various adjustments are made on many steel products to arrive at an average increase price of $5 a ton, steel shipped will be billed at the old price. When the new quotations have been announced, an additional billing will be made to the customer for material shipped after Feb. 15 for any difference between the old and new price.

The steel industry and the OPA have until March 1 to allocate $4.50 of the $5 a ton price increase among various steel products and until March 8 to allocate the balance. While it may not take that long before prices are announced, considerable difficulty may be encountered in arriving at steel price advances designed to alleviate the hardships of the small nonintegrated steel mills. Paradoxically, the products on which many of the larger steel companies are losing money, are the semifinished steels which the small nonintegrated steelmaker uses a raw material for turning out finished steel products.

If the advance on semifinished steel were to be too great in relation to the advance of finished steel products, the nonintegrated maker would be in such a squeeze that the general price increase would place him in a worse position than he was before the strike because of the 18½¢ an hr wage increase. While the steel industry and the OPA finally reached an agreement on the amount of the average increase in steel prices, there was at mid-week no evidence that the allocation of the $5 a ton advance would be a simple matter. Previous price meetings with the OPA have at times been anything but tranquil, although every effort was being made this week to reach a speedy settlement.

SALES offices of steel producers were deluged this week with telephone calls, telegrams and mail from customers attempting to find out what increased steel prices they were to pay. In every case no information was available because the decisions had not yet been made by the OPA and the steel industry advisory committee who were meeting in New York this week.

OPA is heading into one of its most active periods, since practically all steel processors and fabricators will be forced to ask for price relief in order to take care of increased steel prices and increased wages. Many of these plants, it is feared, may have to remain shutdown until final steel price announcements are made and until some assurance is given that those companies outside of the basic steel industry will be given speedy consideration by the OPA.

One thing seems certain this week—unless some form of Government priority control is instituted (and it can only be considered an outside possibility) most steel mills will be faced with the necessity of sharply reducing future customer tonnage quotas. Already behind schedule, a month or more on some products before the strike, and with a month's production lost during the strike and the possibility of losing more time as mills resume production, some firms may have to set aside a full calendar quarter in which to catch up.

IF the third quarter were chosen for such a period a customer would receive no third quarter quota but he would receive back shipments on which previous delivery promises had been made. There remains the possibility that increased productivity and a step up in operations beyond prestrike levels may cut some of the pessimism out of the current market picture.

Philip Murray, apparently satisfied with the way things have turned out for the steel workers, has definitely stated that the union has re-emphasized its agreement with the objective of increased productivity. He also says that since the contracts run for a full year, uninterrupted steel production will be possible.

Because of the confusion and the inability of some firms to determine how long it will take to get into steel production, steel ingot output this week is tentatively estimated at 25 pct of rated capacity, up 19½ points from last week's rate. Despite the pessimism of steel producers in many areas concerning the return to prestrike operating rates, recovery likely will be speedy. Major drawback to a most rapid return in some areas is the shortage of maintenance men, especially bricklayers.

During the strike much of the brick work in coke ovens, openhearths and gas furnace mains had deteriorated and the shortage of workmen for this type of rehabilitation will be the main bottleneck in getting steel production up to full capacity. These conditions, however, are not uniform and for that reason it may be several weeks before some districts are back to prestrike levels even though others regain that point much sooner.

• **PARKERSBURG STEEL SELLS**—Louis Berkman & Co., Steubenville, Ohio, recently purchased the properties of the Parkersburg Iron & Steel Co., Parkersburg, W. Va. The stockholders of the latter company voted on Jan. 14, to liquidate the company. (See THE IRON AGE, Jan. 31, 1945, p. 112.) The new owners apparently intend to operate the plant, since studies preliminary to an operating program are being undertaken, particularly in relation to various problems that have arisen in recent months. This would indicate that the new owners are examining the possibility of obtaining sheet bars for the production of hot-rolled sheets and sheet products.

• **GENEVA COSTS CUT**—The War Assets Corp. reports the reduction of pig iron production costs by $3 a ton in the government's $200,000,000 Geneva Steel plant near Provo, Utah. The agency mentioned an improved production arrangement as incentive to prospective purchasers of the property. WAC also reported the government has an agreement with the Columbia Iron Mining Co., U. S. Steel Corp. subsidiary, which will assure the Geneva plant of an adequate supply of iron ore from that source to Aug. 17, 1961.

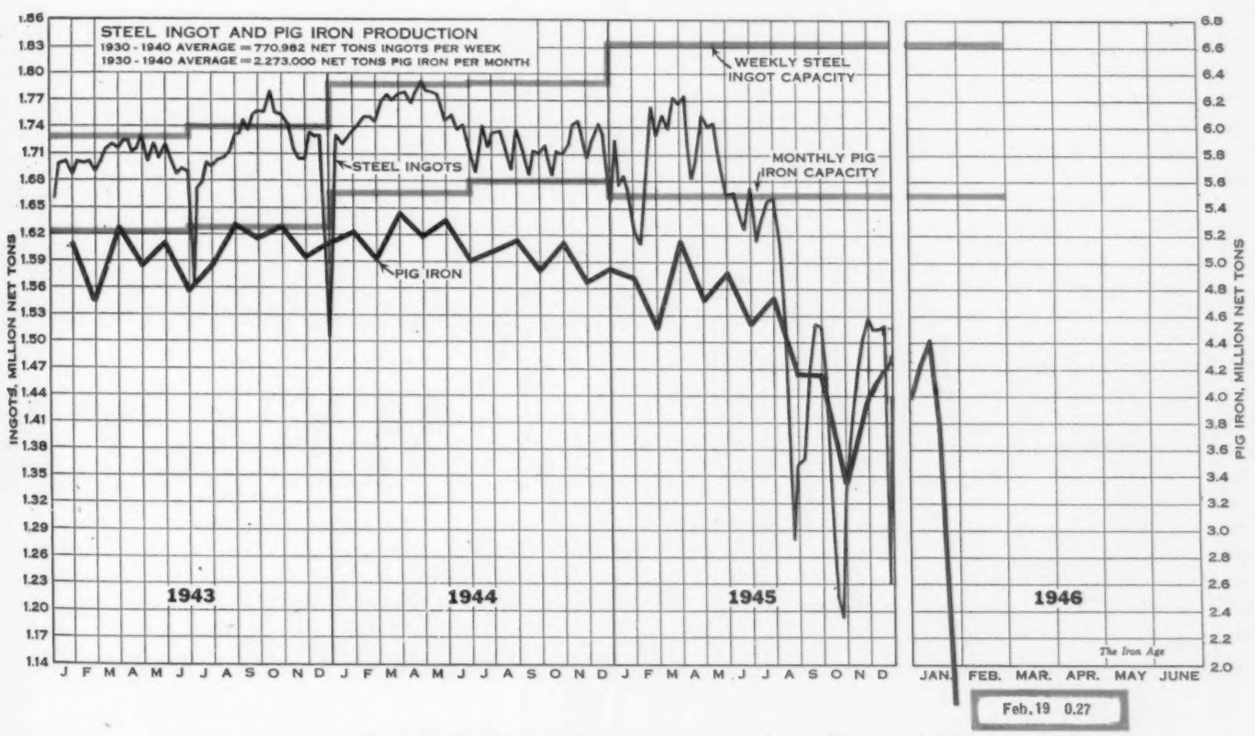
• **GOVERNMENT OFFERS STEEL FOUNDRY**—Offered for sale or lease by the Was Assets Corp. is the East Chicago, Ind., plant where American Steel Foundries made cast armor and steel castings during the war. The plant has six openhearth furnaces with an annual rated capacity of 108,000 tons. Other equipment includes draw furnaces, heat treating and annealing furnaces, gas fired pre-heat furnaces, gas-fired holding furnaces, core and mold drying ovens, and sand and cleaning equipment. The property consists of the main foundry, nine other principal buildings, and a number of minor structures, located on a site adjoining the Indiana Harbor canal.

• **WAC OFFERS FOUNDRY**—A magnesium castings foundry at Cedarburg, Wis., and a plant where aircraft forgings were made at Cudahy, Wis., are offered for sale or lease by War Assets Corp. The magnesium castings foundry has a rated annual capacity of 2,232,000 lb of magnesium castings. Equipment includes heat treating furnaces; two-rack, gas-fired aging ovens; a gas-fired core baking oven, melting furnaces, pickling tanks, a metal cutting bandsaw, and 218 ft of monorail track. Details regarding these properties can be secured from War Assets Corp., 208 South LaSalle St., Chicago 4.

• **NEW DIE STEEL**—To provide die casters of zinc and zinc-lead alloys with a prehardened die steel with high machinability, Heppenstall Co., Pittsburgh, announced a new steel called silver hardtem. The new die steel is being produced in the form of die blocks as well as die block bars and inserts. It is prehardened and requires no further heat treatment by the user.

• **POST-STRIKE STRIKE**—In protest against the suspension by the company of a dozen foremen who had participated in the general steel strike, 50 masons in the openhearth dept. of Carnegie-Illinois Steel Corp., Gary works, walked off the job Monday morning. Reopening operations will not be affected, according to the company, as the plant employs about 600 masons.

• **RAISE LONE STAR HOPES**—Acquisition by R. G. Le Tourneau, Inc., of the $7 million Harmon Hospital at Longview, Tex., for establishment of a vocational training school, has raised Lone Star Steel Co. hopes of securing steelmaking facilities. Le Tourneau plans to build a 300,000 sq ft plant to operate in conjunction with the training school which would provide a possible partial outlet for Lone Star production. The government-owned Lone Star plant, at nearby Daingerfield, now has only ore, coke and blast furnace facilities.


STEEL INGOT AND PIG IRON PRODUCTION
1930 - 1940 AVERAGE = 770,962 NET TONS INGOTS PER WEEK
1930 - 1940 AVERAGE = 2,273,000 NET TONS PIG IRON PER MONTH
WEEKLY STEEL INGOT CAPACITY
STEEL INGOTS
MONTHLY PIG IRON CAPACITY
PIG IRON
INGOTS, MILLION NET TONS
PIG IRON, MILLION NET TONS
1.86 1.83 1.80 1.77 1.74 1.71 1.68 1.65 1.62 1.59 1.56 1.53 1.50 1.47 1.44 1.41 1.38 1.35 1.32 1.29 1.26 1.23 1.20 1.17 1.14
6.8 6.6 6.4 6.2 6.0 5.8 5.6 5.4 5.2 5.0 4.8 4.6 4.4 4.2 4.0 3.8 3.6 3.4 3.2 3.0 2.8 2.6 2.4 2.2 2.0
1943
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J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
JAN. FEB. MAR. APR. MAY JUNE
The Iron Age
Feb. 19 0.27

Steel Ingot Production by Districts and Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
February 12....	3.5	4.5	0	2	0	0	52.0	0	25.0	14.0	37.0	14.0	0	5.5
February 19....	19.0	22.0	25.0	11.0	21.0	9.0	85.0	12.0	35.0	14.0	42.0	23.0	9.0	25.0

* Continuous electrolytic tin plating lines . . .

DISCHARGE END OF MESTA 42" CONTINUOUS ELECTROLYTIC TIN PLATING

* built by MESTA

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

The Army-Navy "E" flag with five stars flies over the Mesta Plant

Bowles Frustrates Overall Upward Price Trends

YOU AND WHO ELSE: *This is Pittsburgh's Mayor David L. Lawrence sound asleep after having helped settle the Pittsburgh power strike recently. He is not alone in this position this week, as many steel and government leaders could testify after they have had their shuteye.*

Washington

• • • **Confirming earlier** reports that price increases would be few and far between under the new administration wage-price policy, Stabilization Director Chester Bowles told the House Banking & Currency Committee on Feb. 18 that "the number of industries which have been, or are likely to be, forced below their prewar earnings for any reason is relatively small."

It is Mr. Bowles' opinion that increases will be needed only in some of the metal using industries, and since this represents only about 9 pct of the cost of living line there will be no overall upward price trend.

Mr. Bowles asked the committee, which is considering the extension of price control to June 30, 1947, to extend immediately the stabilization statutes without amendment.

Reiterating earlier statements by Warren Huff, Chief of OPA's Metals Price Branch, Mr. Bowles said that the $5 a ton steel price increase amounting to 7 or 8 pct would be applied so as to increase production of badly needed and scarce steel products and to bail out the non-integrated producers.

In a back-handed slap at Reconversion Director Snyder, former WPB Chief J. A. Krug, and CPA Administrator John D. Small, Mr. Bowles said that "it is perfectly clear that we moved too fast and too soon in stripping off wartime controls."

Pointing out that on the wage side, control has been re-established but that this does not mean a wage freeze, Mr. Bowles told the committee that wage increases within the industry patterns already laid down since V-J Day will be approved by the government.

According to the Stabilization Director, "A further increase over the present pattern would make economic stabilization impossible." He presented figures to show that 6 million workers have received wage boosts since V-J Day.

He added that "it is not unreasonable to or unfair to ask labor to accept temporary government controls over wages and some cut in their take-home pay as a result of reduced overtime. Much as we might wish to prevent that cut there is no way in which we can do so without precipitating an inflation in which the workers, like everyone else, have everything to lose and nothing to gain."

Re-emphasizing his position that the new policy does not mean a new price level Mr. Bowles made it quite clear that requests for any increases, except in the metal consuming industry where labor costs represent a sizable factor in the total price, would be strongly resisted.

Again minimizing the inflationary effects of the new wage-price policy and striking back at proposals to abolish price control made by the NAM on the grounds that it was a deterrent to full production, Mr. Bowles put the following questions to the committee:

"What are the 52 million workers doing if they are not producing? Why is it that industry after industry is crying for more and more employees? Why is it that reconversion has been accomplished in record time? Why is it that every business forecast indicates rapid increases in production throughout 1946? Why are retail sales continuing to higher and still higher levels —all under a program of price control?"

Speaking of reconverting industries, in which Mr. Bowles included not only those industries which have stopped producing war equipment and are now producing civilian items, but also industries like steel which have had to change the character of their production, he said that "operations are less profitable at the moment than in other parts of the economy."

He added, "But let's keep our perspective. All these industries together make up less than 15 pct of the American economy.

"No one can know for sure how these industries are making out now. Nonetheless their outlook for 1946 as a whole is extremely favorable. For one thing, they face an almost unlimited demand for their

Phil Murray's Pledge

Pittsburgh

• • • **To The Iron Age Philip Murray, president, USWA, says: "Settlement of the steel strike marks a new era of peace in the industry. The nation can now move forward toward achieving the production goals that will make reconversion a reality. The supplemental contracts signed by the union and the industry emphasizes as a cardinal point that it is the intention of both parties to secure and sustain maximum productivity: that the union re-emphasizes its agreement with the objective of achieving the highest level of employee performance and efficiency consistent with safety, good health and sustained effort. I should also like to point out that the contract remains in effect for one full year. This gives both parties the satisfaction of knowing that there will be a full year of uninterrupted production. Just as the industry and the union cooperated to give this nation almost daily new records of production during the war, so I foresee the same cooperation giving the nation all the steel it will need to bring to the people the prosperity which can be ours."**

output. Once they really get rolling they will be producing far more than they ever produced before the war, and increasing volume means lower costs and rising profits."

•

Price Raise Announced

Washington

• • • **Formalizing settlement** of the steel strike, Judge John C. Collet, retiring economic stabilizer, on Feb. 18 issued an order directing OPA to increase prices of all carbon and alloy steel mill products by an average of $5 per ton which the order said is necessary to put into effect the 18½¢ an hr wage increase. The purpose of the increase, he said, is to permit the steel industry to earn an average rate of profit equal to the rate of return during the prewar period. The prewar earnings in the steel industry are to be based on the 1936-39 period.

Price increases are to be distributed by OPA to achieve four basic objectives as follows:

(1) To encourage production of items in greatest demand.
(2) To establish a price structure adapted to the needs of the transition and postwar periods.
(3) To minimize the impact upon the price of consumer goods.
(4) To remove or minimize hardship to smaller and non-integrated producers.

The maximum price adjustments within nine-tenths of the approved increases will be effective within two weeks from Feb. 15.

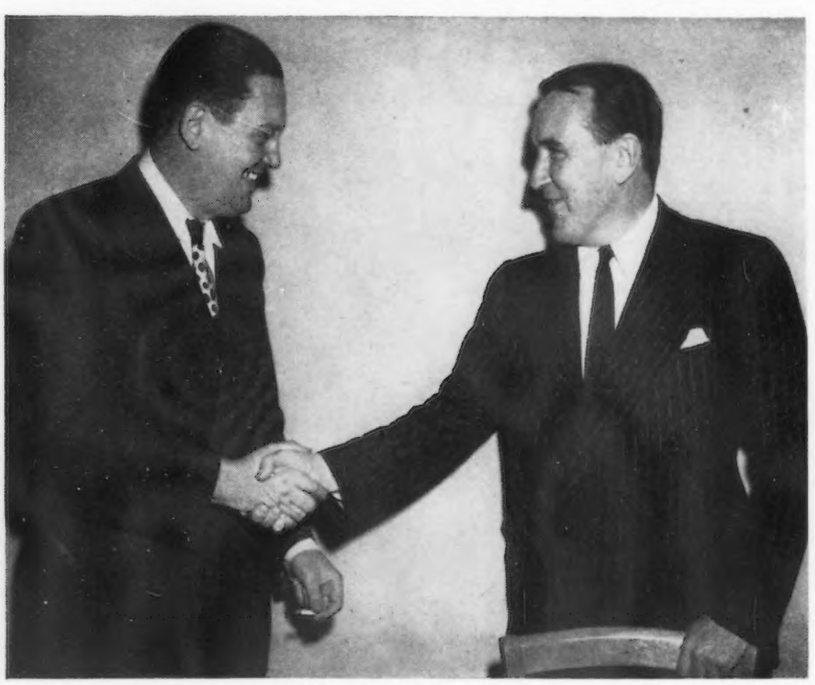
The order said that price increases will be reviewed every three months. It is understood the price rise is retroactive to Feb. 15.

•

Pittsburgh

• • • **Carnegie-Illinois Steel** Corp., and National Tube Co., U. S. Steel Corp. subsidiaries, made the following announcement concerning increases in the prices of steel products manufactured by these companies. "OPA maximum prices of steel products were ordered to be increased, effective Feb. 15, 1946, in the amount equivalent to $5.00 a ton, and the prices of the steel products manufactured by these companies are similarly increased with respect to all shipments on and after that date. Materials shipped after Feb. 15, 1946, will, for the present be invoiced initially at the prices existing prior to that date and revised billing applicable to the specific increases on the materials covered by an invoice (which may be more or less than $5.00 a ton) will be rendered as soon thereafter as possible.

LINE HOLDERS: *Chester Bowles (right) new Economic Stabilization Administrator and Paul Porter (left) who succeeds Mr. Bowles as OPA Administrator will probably lose these smiles as they attempt to hold the line against inflation.*



High Output Rate

Washington

• • • **Finally recognizing** the impossibility of holding a rigid price line without maintaining wage controls, the Administration has granted permission to manufacturers, who are faced with wage increases, to immediately apply for price relief. Previously, a six months' waiting period was required.

Under the terms of an executive order, issued by President Truman on Feb. 14, manufacturers who have had wage increases approved by the National Wage Stabilization Board may immediately apply for price increases, but only if their 1936-39 average profit structure is endangered, and provided they are not operating at an abnormally low rate of capacity. This latter phase appears to be one of the stumbling blocks in the order since it would prohibit immediate application for a price guaranteeing 1936-39 profits if a plant was not operating at full capacity.

At the same time the President announced the elevation of Price Administrator Chester Bowles to the post of stabilization administrator and the appointment of Paul A. Porter, chairman of the Federal Communications Commission, to replace Mr. Bowles as OPA chief. Mr. Porter was formerly head of OPA's rent department.

This change in Administration policy has been described as a moral victory for Mr. Bowles in his fight over steel price increases with Reconversion Director John W. Snyder, but actually Mr. Bowles has only been given authority to attempt to hold a new, but higher price level, despite the President's attempt to defend this breakage of the "hold the line" order of 1943.

Wage increases to be approved by NWSB, according to the President, will follow the pattern of wage increases since VJ-Day. No set figure is mentioned in the executive order, which is recognized as a clear concession to organized labor. However, increases falling within this pattern would range from 15 to 20 pct, and from 15¢ to 22¢ on an hourly basis.

In addition, Mr. Bowles in his

Held Necessary to Increase Prices Under New Policy

new post has been given the authority to determine those classes of wage increases which may be put into effect without requiring prior approval by NWSB and without any waiver of any right to ask for price relief.

Where there is no general pattern to follow in approving wage increases, provision has been made for the approval of increases found necessary to eliminate gross inequities as between related industries, plants or job classifications, or to correct substandards of living or to correct disparities between the increase in wage or salary rates since Jan. 1941, and the increase in the cost of living between that date and September 1945.

This section is one of the most important contained in the executive order, since it would have the effect of setting the highest existing wage level within particular industries as the maximum within the limits of the new wage-price policy as outlined by the President.

The President also pointed out that the order takes into account the thousands of wage agreements reached before and after VJ-Day, but he warned that "the program is not to be interpreted as permitting indiscriminant wage increases."

The President called upon all agencies of the government to aid OPA in carrying out the new policy and warned that priorities and allocations will be used to prevent increases in prices and that inventory controls will be strictly enforced. Congress was urged by President Truman to extend immediately the Stabilization Act, the subsidy program, and the Second War Powers Act.

Officials at OPA, recognizing that the new policy will mean the greatest administrative load in OPA's stormy history, are attempting to work out a plan for automatic price increases to be granted to manufacturers paying approved wage boosts.

Meanwhile, the first indication as to what course would be followed in regard to steel users faced with higher steel prices has come out of OPA. On Feb. 5, OPA issued an important amendment to Supplementary Order 119, which was not widely publicized. This order sets up an individual adjustment procedure for reconverting manufacturers whose annual business totals at least $200,000. The order affects producers who account for about 85 pct of all consumer durable goods production.

The Feb. 5 amendment to the order set up "materials cost increase factors" for certain basic materials and components. These factors must be added to 1941 materials cost by manufacturers who qualify under the order. Previously, manufacturers figured their individual materials cost increases, subject to OPA approval.

The new mandatory "materials cost increase factors" are given in percentages, which are the limit on which increases in materials may be used in calculating ceiling prices for finished products. They are based on the averages found by OPA in the thousands of applications when the materials costs were calculated individually.

The factors must be applied in place of any increase in the price of the material covered by the factor, regardless of whether the factor is higher or lower.

Under the present order, no increase factor is permitted for the majority of steel products, but as has been pointed out at OPA, it would be a relatively simple matter to revise these factors upward if it was determined that an increase in the price of steel was creating hardship to reconverting manufacturers. This is one method, already on OPA's books, in which the steel price rise could be handled on an automatic basis, insofar as it effects steel users. However, it should be pointed out that OPA is determined to have as much of the steel increase as is possible absorbed by steel users, for the revised SO 119 specifically prohibits the inclusion of increases in the ceiling prices of materials and components which took place after Nov. 27, 1945, unless failure to do so would result in "hardship impeding reconversion."

Existing materials increase factors for steel products are as follows:

	Factor (pct)
Cold rolled bars	4.0
Hot rolled bars	5.0
Cold rolled rods	0
Cold rolled sheets	0.0
Hot rolled sheets	5.0
Stainless	0
Cold rolled strip	0
Hot rolled strip	0
Tubing	0
Spring wire	0

It is interesting to note that the regulation does not permit any increase on the steel products, which have been in extremely short supply and on which the industry con-

Weirton Steel Hikes Wages 22¢ an Hour

Weirton, W. Va.

• • • A 22¢ an hr increase for hourly, piece-work, and tonnage employees of the Weirton Steel Co., providing a basic minimum wage of $1.00 an hr for the first time in the history of the steel industry, was announced in a joint statement by Thomas E. Millsop, president of the company and Larry Lafferty, president of the Weirton Independent Union, Inc.

At a meeting Feb. 17, company and union officials concluded an agreement to amend the existing contract to provide for the wage increase and also to eliminate present shift premium differentials. All other contract provisions remain unchanged. The wage increase will be effective as of and retroactive to Jan. 1, 1946.

Mr. Millsop announced further that all salaried employees, who are not covered by the contract with the union, will receive an increase of 15 pct, effective on the same date.

Mr. Lafferty pointed out that the 22¢ an hr increase establishes the basic minimum rate paid to unskilled labor at $1.00 per hr not only for the first time in the history of the steel industry, but also, according to available records, for the first time in any of the leading industries in the United States. He emphasized the fact that the Weirton Independent Union had secured the wage increase without a strike and thus had maintained an unbroken record of no lost production time or wages because of labor trouble since long before the start of the war.

tends the greatest increase is needed.

Factors for other materials and components follow:

	Factor (pct)
Bearings	0
Brass mill products—sheets, strip, bar, tubing, etc.	0
Castings:	
Copper and copper base—gravity poured — October 1941 price (¢ per lb):	
Less than 25	18.0
25.01 to 30	13.0
30.01 to 35	9.0
35.01 to 40	7.0
Over 40	5.0
Die castings	10.0
Gray iron	24.0
Malleable iron	14.0
Steel:	
Carbon	11.0
Manganese	4.0
Containers, corrugated or solid fiber	30.0
Cord sets, electric	10.0
Crates and boxes, industrial, wire-bound and nailed wood, cleated fiber	50.0
Fabric, coated and combined:	
Oil coated	15.0
Pyroxylin coated and combined	12.0
Rubber coated and combined	10.0
Forgings, ferrous	9.0
Gears, pinions, sprockets, except automotive	0
Glass, fabricated products, except building glass products	10.0
Metals, unfabricated:	
Copper ingots, cakes, and wire bars	0
Iron, pig	7.8
Lead, pig	11.1
Nickel, shot or ingot	0
Nickel silver	0
Tin, pig	0
Zinc, slab	13.8
Motors and generators, electrical, fractional horsepower including electric phonograph motors of all types, but excluding toy motors	9.0
Plastic parts	10.0
Plastic materials	0
Rubber, fabricated parts, including molded, extruded, lathe-cut, and chemically-blown sponge	12.0
Screw machine products, except bolts, nuts, screws and rivets	10.0
Stampings, metal, except forgings, non-ferrous mill products, wire goods, or steel mill products	10.0
Switches, electrical	0
Wire, electrical	0
Bare copper	0
Lead wire	0
Magnet, enameled	0
Portable cord, including lamp, heater, and heat resisting	10.0
Resistance	0
Wood parts:	
Small dimension (cut stock)	32.0
Striking tool handles	45.0
Turned and shaped products	30.0

Repair Problem Prime Handicap to Recovery Of Normal Operations

Pittsburgh

• • • **Despite the pessimism** of steel producers in this area concerning the return to prestrike operating rates, recovery will likely be rather speedy. One of the biggest handicaps, however, in this rapid return to normal operations is the shortage of maintenance men, especially bricklayers. During the strike, much of the brickwork in coke ovens, open hearths and gas furnace mains has fallen in, and the shortage of bricklayers will likely slow down the industry in getting into full production. This particular problem apparently is more acute with some of the larger companies that had difficulty with the CIO-USWA during the strike in keeping maintenance men on the job.

Some steel companies are in fairly good shape and their return to normal ingot production rates will be rapid. One local mill estimates that by the end of the week, ingot production will be back to normal. Other mills maintain that it will be as much as two months before prestrike ingot production figures will be attained. This, however, is extremely pessimistic, and time will probably bear out a far more rapid pickup of operations.

Carnegie-Illinois Steel Corp. figures its shipments will amount to about 10 pct of normal shipments at the end of this week; 15 pct by the end of the second week; and then by the end of the fourth week shipments will be normal. The 10 pct shipments the first week will be made chiefly from materials on hand ready for shipment, since actual production during the first week will be rather low. However, shipments will likely pick up faster during the second and third weeks. Ingot production, estimated to be practically nothing during the current week, will probably hit an average of between 25 and 30 pct by the end of the week, which would mean something like a 10 pct average for the full week.

National Tube Co.'s McKeesport National plant will go back to full production rather rapidly if gas is provided from the Carnegie-Illinois Clairton Works coke ovens in the quantities required. At Lorain, National has been unloading coal during the strike and the company is in pretty fair shape. National has had excellent relations with the union on maintenance throughout the strike, and they had increasing numbers of maintenance workers in the plants during the latter part of the strike. Their semifinished steel was practically cleaned out when the strike started because their shutdown was one of progressive stages up to the finishing mills. Consequently, finishing mills will not be started until a supply of steel begins to move through.

Youngstown Sheet & Tube Co., both in eastern Ohio and Chicago, will probably hit prestrike ingot production rates by the end of this week. This company's maintenance problems during the strike were not at all serious. Youngstown signed its contract with the CIO-USWA last Sunday and almost immediately men began to go back to work.

Pittsburgh Steel Co., which signed its CIO-USWA contract last Saturday, had men going back to work late Saturday afternoon, and by the end of this week the company will be back to full operations. There may be a lag between full ingot production rates and shipments, but it is quite possible that semifinished material on hand will take up this slack.

Crucible Steel Co. of America, signing with CIO on a plant by plant basis, had started the trek back to normal by Tuesday. By tomorrow, it is expected that operations will be pretty well normal, with ingot production near prestrike levels.

Jones & Laughlin Steel Corp., first to strike and around the last to sign up at the new wage rates, has been extremely pessimistic about its return to normal operations. J&L, prior to the strike, was operating at a rate considerably higher than most producers in this area, and the company claims it will take about six to eight weeks to get back to that rate. This, however, depends upon an expected major repair project in the plants, resulting from a walkout two days before the official strike date, plus an extremely difficult maintenance problem during the strike. Some of the company officials expect to find conditions bad at the Pittsburh blast furnaces because workers walked out of the department with iron still in the furnaces. However, should the plants be in good shape, a return to normalcy in operations should not take longer than three to four weeks.

CPA Acts to Insure Equitable Distribution During Steel Emergency

Washington

• • • **John D. Small, Administrator** of Civilian Production, has taken steps to insure the equitable distribution of steel production during the period in which the steel industry is resuming operations.

The procedure to be followed by the steel producers during this emergency period was outlined by Mr. Small in a "declaration of policy" designed to provide for the minimum needs of the greatest number of steel users and for maintenance and repair requirements.

Mr. Small emphasized that "small business, non-integrated steel producers, warehouse stocks for general maintenance and repair must be given urgent consideration." He pointed out also the priority ratings outstanding prior to the strike, which were suspended on Jan. 22, would continue suspended to allow producers the greatest latitude in spreading steel deliveries to the largest number of consumers until steel production again reaches high level. This suspension will continue in operation until steel production has reached such levels that overall production will not be injuriously affected by the issuance of specific preference ratings, he said. This means that no priority ratings will be applied except in cases of extreme emergency.

"Declaration of policy" for steel producers during the present emergency:

"The loss of steel production, due to the work stoppage in the plants producing over 90 pct of the nation's supply has greatly intensified the serious shortage of steel for a large section of the nation's industry.

"It is clear that steel producers cannot for a time meet the demands for steel required to maintain production at the level prevailing before the strike. Practically every steel user will be in hardship status due to lack of steel."

Therefore, in view of this situation, CPA has issued a statement of policy outlined below to be followed by steel producers in the distribution of all types and shapes of steel mill products:

(1) All producers shall ration all delivery so that no individual customer nor individual class of customers will receive more steel than is needed for immediate use.

(2) All producers shall supply the minimum needs of the largest possible number of their customers giving to each his fair proportionate share.

(3) All producers shall schedule shipments to warehouse distributors so that they may make deliveries of standard items in order to permit continuation of supply of production materials for small business and to continue to supply items required for maintenance and repair purposes.

(4) All producers shall schedule shipments of semi-finished material to non-integrated producers so that these producers' operations may be maintained at an equitable rate.

Direction 13 to PR 1 which suspended priority rating outstanding prior to this strike, will be continued in effect until steel production reaches a normal level. Also, Direction 8 to PR 32 will continue the more restrictive inventory provision during this period.

Simultaneously with the issuance of CPA's declaration of policy to steel producers Mr. Small announced a revised statement of the policy which was put into effect for steel warehouses prior to the start of the strike and which called upon them to establish a voluntary rationing policy.

This is the policy for general steel warehouses during the present steel emergency.

(1) For all types and shapes of steel mill products: Ration all deliveries so that no customer will receive more than is needed for immediate use and by so doing stretch stocks to last over the longest period possible for those uses for which the items handled have customarily been sold.

(2) For types and shapes of steel mill products ordinarily used for maintenance and repair: Should stocks of these products be seriously depleted, deliveries should be made only for emergency maintenance and repair uses which have to do with public health and safety, such as requirements of hospitals, public utilities and transportation facilities, and for other extremely essential maintenance and repair.

To enable suppliers to conform with this voluntary rationing policy, Direction 13 to PR 1 will remain in effect until the end of the emergency.

THREE IS A CROWD: *Even though the war is over the government still continues to be the third party in the nation's major wage disputes. CIO President Philip Murray (right), U. S. Steel Corp., Vice-President, John A. Stephens and Secretary of Labor Schwellenbach after announcement of the steel strike settlement affecting the U. S. Steel Corp. Other steel companies signed a similar contract later.*

Metallurgists Hold Annual Meeting In Chicago Feb. 25-28

New York

• • • **At its first annual** meeting to be held in Chicago, the American Institute of Mining & Metallurgical Engineers will present over 90 technical papers on mining and milling methods, nonferrous metallurgy, geophysics and physical metallurgy.

This 163rd meeting of the institute will be held at the Palmer House, Chicago, Feb. 25-28. The meeting scheduled for February, 1945, had been canceled because of ODT regulations.

The Howe Memorial Lecture of the Iron & Steel Div., high point of the meeting, will be given this year on Feb. 28 by T. L. Joseph, professor of metallurgy and assistant dean, Minnesota School of Mines & Metallurgy. A recipient of the highest honors of the Iron & Steel Div., the J. E. Johnson award in 1927 and the Robert W. Hunt award in 1937, Mr. Joseph will talk on the reduction of iron ore in the blast furnace.

Awards of the society will be conferred at the annual banquet on Feb. 28 to Zay Jefferies who will receive the John Fritz medal for "leadership in the solution of problems affecting the production, conservation, substitution and scientific appraisal of metals and alloys." The Saunders gold medal will go to Fred Searls, Jr., "for outstanding ability and discernment in the practice of mining geology."

To J. J. Alexander goes the J. E. Johnson, Jr., award "for developing a method for connecting two turboblowers in series in order to blow 100,000 cu ft of wind per min at high pressure and for his work on adding a controlled amount of moisture to the blast."

The Anthony F. Lucas gold medal will be awarded to James O. Lewis and the Rossiter W. Raymond memorial award certificate goes to Capt. John H. Hollomon.

The Institute of Metals Div. award will be made at the division dinner Feb. 26 to P. W. Bakarian and C. H. Mathewson for their paper "Slip and Twinning in Magnesium Single Crystals at Elevated Temperature."

The speaker at the Institute of Metals Div. dinner will be R. G. Gustavson, vice-president and dean of faculties, University of Chicago. Dr. Gustavson was active on the Manhattan Project at the University of Chicago and will present some of the phases of nuclear physics.

New chairman of the Iron & Steel Div. will be W. E. Brewster, now chairman of the division's Blast Furnace & Raw Materials Committee. He succeeds E. G. Hill.

OPA Restores Previous Ceiling Price System On Used Machine Tools

Washington

• • • **Effective recently,** OPA restored ceiling prices for used machine tools based on date of manufacture and condition of machine in the same form as they existed prior to Dec. 22, 1945.

To provide automatic reductions on ceiling prices for used machine tools as they grew older, OPA on Dec. 17 of last year revised the pricing procedure so that ceilings were governed by fixed ages, such as "no more than 4 yr old," and "more than 4 yr, but less than 10 yr old."

However, OPA said it has been found that operation under such a pricing method provided an administrative burden of time and manpower-consuming correspondence between dealers, manufacturers and OPA officials in cases where original invoices giving date of sales were not available.

The old ceiling prices, in effect before last Dec. 17, which are now being restored, are as follows:

For used machine tools manufactured on or since Jan. 1, 1936, 95 pct of the price of the machine when new, if sold on a rebuilt and guaranteed basis; if sold in any other condition, such as "as is," 70 pct of the price of the machine when new.

For rebuilt and guaranteed used machine tools manufactured between Jan. 1, 1930, and Dec. 31, 1935, 90 pct of the price of the machine tool when new; if sold in any other condition, 65 pct of the new tool price.

For rebuilt and guaranteed used machine tools manufactured between Jan. 1, 1920, and Dec. 31, 1929, 80 pct of the when new price; if sold in any other condition, 55 pct of the new tool price.

For rebuilt and guaranteed used machine tools manufactured before Jan. 1, 1920, 70 pct of the price when new; if sold in any other condition, 45 pct of the new tool price.

COMING EVENTS

Feb. 25-28—Annual Meeting, American Institute of Mining and Metallurgical Engineers, Chicago.

Feb. 25-Mar. 1—Spring Meeting, American Society for Testing Materials, Hotel William Penn, Pittsburgh.

Mar. 4—SAE German Engineering Evaluation Meeting, Rackham Educational Memorial, Detroit.

Mar. 5-6—Midwest Quality Control Conference, La Salle Hotel, Chicago.

Mar. 20-22—Production Show and Conference, Chicago Technical Societies Council, Stevens Hotel, Chicago.

Mar. 29-30—American Gas Assn. Conference on Industrial and Commercial Gas, Commodore Perry Hotel, Toledo.

Apr. 2-5—Packaging Exposition, sponsored by American Management Assn., Public Auditorium, Atlantic City, N. J.

Apr. 3-5—SAE National Aeronautical Meeting, Hotel New Yorker, New York.

Apr. 8-12—ASTE Exposition, Cleveland Public Auditorium, Cleveland.

Apr. 11-13—Spring Congress, Electrochemical Society, Inc., Birmingham, Ala.

Apr. 22-27—National Plastics Exposition, Grand Central Palace, New York.

Apr. 25-26 — Twenty-ninth AIME Annual Open-Hearth Steel and Blast Furnace and Raw Materials Conferences, Chicago.

May 6-10—Golden Jubilee Foundry Show, American Foundrymen's Assn., Cleveland Public Auditorium, Cleveland.

May 29-31—Machinery Dealers National Assn., national convention, Claridge Hotel, Atlantic City.

June 2-7—SAE Summer (semi-annual) Meeting, French Lick, Ind.

June 3-5—American Gear Manufacturers Assn., Annual Meeting, The Homestead, Hot Springs, Va.

June 24-28—Forty-ninth Annual Meeting, American Society for Testing Materials, Buffalo.

Weekly Gallup Polls . . .

Republicans Labeled Party of Wealth

• • • **One underlying** problem confronts the Republican Party strategists and that is how to convince the country that the Republican party is as much interested in the welware of Americans of average and below average income as it is in the welfare of the more moneyed classes, according to George Gallup, director, American Institute of Public Opinion. In the minds of millions of voters the G.O.P. is still tagged as the party of privilege and wealth.

After establishing itself as a major party nearly a century ago, the G.O.P. drew its support from virtually all segments of the population outside the South. It enjoyed a reputation as the party of prosperity, of good times and the "full dinner pail."

Today, however, the majority of voters consider it the party interested largely in men and women of above average income. Only a few, about one fifth, believe the G.O.P. is vitally concerned with the welfare of the men and women of average income who make up the middle economic class.

As for citizens of the below average income group, practically no one in the country—only one person in ten—thinks they are the main interest of the Republican Party.

The problem for the G.O.P. is clearly outlined in the results of an institute survey in which field reporters gathered, the views of men and women in all walks of life.

"Which political party—the Democratic or the Republican—do you think is most interested in persons of above average income?"

	Pct
Democratic	14
Republican	57
No difference	17
No opinion	12

"Which political party is most interested in persons of average income?"

	Pct
Democratic	46
Republican	21
No difference	21
No opinion	12

"Which political party is most interested in persons of below average income?"

	Pct
Democratic	61
Republican	10
No difference	18
No opinion	11

The Poll shows interesting contrasts between the attitudes of Democrats and Republicans themselves.

The Republican Party is the one most interested in above average income voters, say the Democrats. Republican voters put the Democrats ahead of themselves as the party most interested in below average income voters.

As for the fellow in between—the voters of average income—adherents of each party feel that their party is the one more likely to be interested in him. But the Democrats are more convinced of this than are the Republicans. Nearly seven out of every ten Democrats say their party is the one most interested in people of average income, whereas only four in every ten Republicans say their party is the one most interested in that group.

It may come as a surprise to many political observers that Harold E. Stassen leads Gov. Thomas E. Dewey as the popular choice for the Republican presidential nomination in 1948 in the midwest, at the very core of Republican Party strength.

That section of the country cast about 40 pct of the total national Republican vote in 1944 and provided 82 of the 99 electoral votes which Governor Dewey received in the last election.

Governor Dewey is the top choice of the rank and file throughout the entire country.

Tabulation of replies from polling in Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Kansas, Iowa and Missouri, taken as a group shows Republican preferences of the rank and file lining up as follows:

Stassen Leads Governor Dewey as Midwest Choice; Labor Still Likes Truman

• • •

The question:

"What man would you like to see elected president in 1948?"

Midwest States

	Pct
Stassen	33
Dewey	30
Bricker	11
Taft	6
Vandenberg	6
MacArthur	5
Eisenhower	3
Johnston	1
Saltonstall	*
Warren	*
Others	5

* Less than 1 pct

Governor Bricker also runs stronger in the midwest than he does throughout the country as a whole.

However, when Midwest is combined with the rest of the country, analysis by institute statisticians finds Dewey top choice of Republican voters in the farm and small town areas as well as in the cities, among young voters and old, as of today.

Farm Areas & Small Towns (pop. under 10,000)

	Pct
Dewey	39
Stassen	28
Bricker	7
MacArthur	6
Vandenberg	5
Taft	5
Eisenhower	3

Cities over 10,000 population

	Pct
Dewey	40
Stassen	27
Bricker	9
MacArthur	6
Vandenberg	4
Eisenhower	4
Taft	3

Age Groups

	Under 35 Yr. Pct	Over 35 Yr. Pct
Dewey	47	36
Stassen	25	29
Bricker	7	8
MacArthur	8	6
Vandenberg	2	6
Eisenhower	5	3

(*Continued on page* 106)

Pig Iron, Coke Stringencies, Fail to Shut Gray Iron Foundries

o o o

By CHARLES T. POST

o o o

Chicago

• • • **Gray iron jobbing** foundries throughout the nation survived three weeks of the basic steel strike with scarcely a shutdown due to lack of pig iron or coke.

Allocation of available merchant iron allowed foundries which had not themselves been struck to exist on a lean diet. Many production foundries, particularly those owned by or serving the struck automotive, farm equipment and electrical plants, were closed either by direct union action or through loss of outlet for their castings. Some jobbing foundries also cut production when shipments to struck plants were ordered stopped. These firms diverted their activities to other types of production insofar as curtailed raw material supplies permitted.

Merchant pig iron production was cut approximately 50 pct by the steel strike, it was estimated. Despite this sharp curtailment in pig iron supply and low inventories at the outset of the strike, overall foundry demand dropped sufficiently, for reasons outlined above, to prevent shutdowns by the castings firms still in production.

Before the strike it had been predicted that the foundries would be among the first to run out of raw materials. Most firms had been operating since last fall on slim pig iron inventories, with allocation by the Civilian Production Administration in force on all merchant iron produced in the Chicago and St. Louis districts. Still more critical was the shortage in the South.

The situation during the strike was saved in the Midwest by continued merchant iron production by Interlake Iron Corp. at Chicago and Duluth, Wisconsin Steel Works of International Harvester Co. at Chicago, and Koppers Co., Inc., at Granite City, Ill. Allocation of this production by CPA provide a slim but sustaining diet for foundries still in operation.

Almost as serious as the pig iron shortage was the sharp drop in availability of coke. A Chicago foundry, which at one point had cleaned out its coke supply, was providentially saved by arrival of another car. Operations were continued, unloading coke direct from car to cupola.

The pinch was sufficiently tight to prevent any increase in castings production by foundries still operating. In most cases, firms which had to drop struck customers from their schedules were unable to replace these outlets with production for other buyers. The CPA resisted pressure to allocate iron for increased production, it is understood.

End of the steel strike will provide little immediate relief for the foundries. As rapidly as possible steel mills will step up coke and pig iron production for their own use. Resumption will be gradual in both coke oven and blast furnace departments, with an estimated two weeks required to reach pre-strike operating levels. Even then, merchant iron production will be lower than before the strike. Pig iron and coke production at some struck plants has continued at a low level through maintenance agreements with the United Steel Workers union. Total output, however, has been insignificant and little if any will find its way to the foundries.

Far Western foundries received a break through early signing of a wage agreement by Geneva Steel Co. with the AFL union which represents its workers. This allowed the plant, largest source of foundry iron for the West Coast, to continue production.

NO BULL: *This world's largest bull ring with a seating capacity of* 48,000, *is being rushed to completion in Mexico City. A great portion of the* 2000 *tons of steel reinforcing bars used in the construction is being supplied by Republic Steel Corp. A ring-side seat for the first five fights (exclusive of the cost of the tickets themselves—just the right to buy the tickets) was reported to be going for nearly* $206.

Cold weather has further curtailed already slim shipments of scrap, making impossible any replacement of pig iron with scrap in cupola charges. Little improvement can be expected for at least two months in rural scrap shipments, and there is little to indicate that 1946 will see any considerable tonnage from this source.

The railroads, too, have been disappointing as cast iron scrap producers. Until obsolete equipment now pressed into emergency service can be released, railroad scrap tonnage must remain limited. Equipment retirement partially depends on availability of new equipment, which in turn is related to steel supplies. Rails have practically disappeared from the foundry scrap picture. Lack of labor for dismantling operations provides a further complication.

Although the foundries have not been too finicky about scrap specifications for months, increased broadmindedness during the strike has enabled them to secure some material originally destined for struck plants.

Offer Shell Steel Bars

Philadelphia

• • • **The War Assets** Corp. offers to the highest bidder f.o.b. present location, and as is, hot-rolled openhearth alloy shell steel bars, annealed, machine straightened 12 ft to 20 ft long, approximate analysis as follows: C 0.30 to 0.39, Mn 0.75 to 1.15, Si 1.25 to 1.65, Cr 1.00 to 1.50, Ni 0.50 max., S 0.045 max., P 0.04 max., Cu 0.30 max., Al 0.10 max.

Size	Quantity	Location
1.575 in.	1,674,085 lb.	Horseheads, N. Y.
1.575 in.	347,880 lb.	Philadelphia
1.654 in.	87,420 lb.	Brooklyn
1.968 in.	1,092,203 lb.	Buffalo
1.968 in.	227,350 lb.	Horseheads, N. Y.
1.968 in.	486,132 lb.	Philadelphia
3.346 in.	779,315 lb.	Marietta, Pa.
3.740 in.	583,740 lb.	Buffalo
3.740 in.	87,130 lb.	Voorheesville, N. Y.
3.740 in.	94,920 lb.	Marietta, Pa.

All of this material is rusty and some bars are pitted.

Sealed bids in plain envelopes will be received until 10 A. M., Feb. 25, 1946, and should be addressed to "War Assets Corp. Capital & Producers Goods Division, 1528 Walnut Street, Philadelphia 2, Pa. Attention: John L. Noll. Sealed Bid: To be opened Feb. 25, 1946—10 A. M."

Government-Owned Geneva Plant To Produce Pig Iron for Steel Mills

Washington

• • • **With heavy tonnages** lost as the result of the steel strike, the Government is planning to go into the pig iron business. Assuming the role of a merchant operator with a restricted list of buyers, CPA has announced that it is going to blow in five blast furnaces to make both foundry and steelmaking grades. Actual production will be in charge of private producers. The plan provides for subsidy payments where they are held to be required.

The iron will be converted into soil pipe castings and other products to meet pressing needs for housing supplies and other critical public requirements, CPA said. It was estimated that the Government operated furnaces will increase pig iron production by more than 1 million tons annually.

Resorting to power it still has, CPA will distribute the iron under M-21, a hangover from WPB Allocation Control. John Claussen, Chief of the CPA Big Iron Unit, will have charge of what was called "informal distribution" of the iron. The principal users will be cast iron soil pipe foundries, and makers of cast iron radiation, farm machinery and automotive castings.

Four of the furnaces to be put in blast are Government-owned, including two at Geneva, Utah, and one each at Granite City, Ill., and Gadsen, Ala. In addition a privately-owned furnace will be operated at Struthers, Ohio.

The two Geneva furnaces are expected to start up immediately as this plant was strike free. They are operated by the Geneva Steel Co., U. S. Steel Corp. subsidiary, for DPC. They are expected to produce 47,000 tons of pig iron monthly in addition to the 15,000 tons currently being produced by the one blast furnace now operating there.

This 62,000 ton expected monthly pig iron production compares with the listed 100,000 ton monthly capacity and the low rate of operation is largely due to the low rate of coking operations there, CPA said.

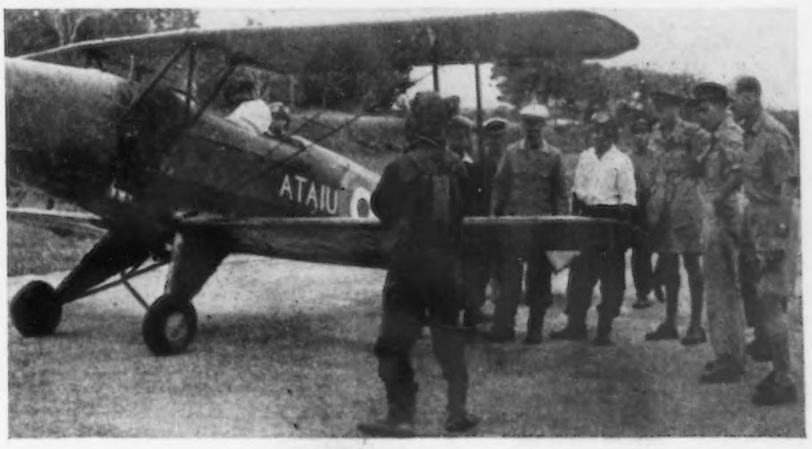
Negotations are also underway with other interested government agencies and blast furnace operators to bring the following furnaces into production, with subsidy arrangements wherever necessary:

(1) Struthers Iron & Steel, Struthers, Ohio. Estimated monthly production 13,450 tons.

(2) Coppers Coke & Coal Co., operated, DPC furnace at Granite City, Ill. Estimated monthly capacity 16,000 tons.

(3) Republic Steel Corp. operated, DPC owned plant at Gadsen, Ala. This furnace will produce steel grade of pig iron and will permit the Republic furnace at Thomas, Ala., to operate full time on foundry grades.

USEFUL JAPS: *Japanese naval aircraft taken over by the Allies in Malaya are being tested by Jap naval pilots under supervision of RAF officers of Allied Technical Air Intelligence at Singapore. Photo shows a Jap "Cypress" biplane warming up prior to takeoff.*



Steel Fabricators And Small Producers Find Union Contract Unfair

Pittsburgh

• • • **Both the non-integrated** steel manufacturers, headed by Lauson Stone, president of Follansbee Steel Corp., and the Tri-State Industrial Assn., headed by Ray Booth, secretary-manager, were pretty much at a loss to say how their memberships would react to the signing of the new CIO-USWA wage contracts.

While there was no certainty that all members of the Non-Integrated Steel Manufacturers would refuse to sign the new wage contracts, speaking for Follansbee an offiical of the firm said that such a contract was impossible. It is believed that the majority of these plants will not sign with the union until the government price increases are clarified and it is certain that these mills will be able to participate substantially in these price increases.

The Tri-State Industrial Assn. reported on Monday that as far as was known, only one of its members fitting into the fabricator or steel processor category had signed contracts with the union or had gone back to work. These firms feel it is impossible to sign increased wage contracts when they have price increases and stabilized selling prices also staring them in the face. At many of the plants of the manufacturers, picketing was stronger on Monday than during the steel strike, mainly to make certain that no attempt would be made to operate without a CIO contract.

Names Officers Heading Mid-America Exhibit

Cleveland

• • • **Norris J. Clarke,** senior vice - president, Republic Steel Corp., has been named president of the Mid-America Expositions, Inc., which will sponsor an exhibit of Ohio's industrial and commercial products in Cleveland's Public Auditorium, May 23 to June 2.

Charles J. Stilwell, president, Warner & Swasey Co., and A. W. Steudel, president, Sherwin-Williams Co., will serve as vice-presidents. The officers will be assisted by an executive committee composed of: C. T. Burg, Glen H. Campbell, George H. Codrington, Frederick C. Crawford, Sam W. Emerson, A. C. Ernst, Clifford F. Hood, H. P. Ladds, A. J. Weatherhead, Jr., E. A. Hahn, Elmer L. Lindseth, J. L. Myers, John P. Murphy, John Patt and A. A. Stambaugh.

Foundry Personnel Distribution Study

New York

• • • **The National Founders Assn.** here has completed a survey of personnel distribution to enable foundry operators to compare their own personnel with other plants in their field. The survey covered 235 plants and is judged an answer to the problem of how foundry labor is employed.

Number Plants Surveyed—	Composite 235	Non-Ferrous 39	Steel 27	Malleable 18	Iron 133
Molders	17.9%	17.40%	10.8%	20.2%	22.1%
Coremakers	8.5	10.66	6.8	6.4	10.5
Cleaning room	15.0	15.47	23.6	4.0	13.7
Melting	5.1	7.00	4.5	3.5	5.4
Foundry labor	13.8	13.40	10.8	14.7	15.3
Miscellaneous labor	4.3	3.50	4.1	5.0	4.9
Shipping	2.2	1.98	1.0	7.7	1.9
Maintenance	5.1	5.00	6.2	3.7	3.8
Annealing	1.2	.60	0.8	4.2	0.9
Heat treating	0.5	.90	0.4	0.3	0.1
Engineers	0.4	.70	0.4	0.3	0.4
Patternmakers	2.7	2.40	1.6	2.0	3.6
Clerks	2.2	2.67	2.2	1.8	2.1
Foremen	4.1	5.00	5.3	3.5	3.8
Supervisors	1.0	1.12	1.5	1.4	0.9
Superintendents	0.7	.92	0.6	0.4	0.7
Others	15.3	12.04	19.9	20.5	9.8

Committee Expected To Report on Stockpiling Bill With No Changes

Washington

• • • **With hearings on** the Thomas-May stockpiling bill (S 752) ended before the House Committee on Military Affairs on Feb. 5, indications are that it will be reported without amendment to the House on or about Feb. 26. Supported by government departments, the bill as pointed out in THE IRON AGE of Dec. 13, 1945, p. 86, has passed the Senate and was not changed by the House Committee.

At the closing hearings, Harold Stein, chief, OWMR Stockpiling Section, and Secretary Julian D. Conover of the American Mining Congress, urged that the measure be enacted without amendment as soon as possible.

Mr. Conover told the Committee that the mining industry's principal concern has been that stockpiles be held inviolate for a future military emergency and declared that releases must not, under any circumstances be used as buffer stockpiles. He said that it is fundamental that Congress retain control over the stockpiles and that no administrative agency, unless specifically authorized by Congress, should have the power to use or release them for other than war purposes.

"For our future defense and security," Mr. Conover said, "it is vital that we maintain a healthy, 'going' mining industry, constantly developing additional reserves and new sources of ore, together with new methods of treating lower grade and hitherto non-commercial deposits, and equipped with the necessary plant, organization and know-how to serve the nation in any future emergency. The physical stockpiles cannot possibly supply the full requirements of a major conflict. They are only a first line of defense. They must be backed up by a vigorous, functioning mining industry, capable of continuing to produce the large additional quantities of minerals that will be required. Such an industry is our basic source of many of these vital war materials."

WAC Negotiates Sale Of Shipyards Not Yet Declared in Surplus

Washington

• • • **The War Assets Corp. has** revealed the existence of negotiations for the disposal of four government-owned shipyard facilities, prior to their being declared surplus by the Maritime Commission.

Bids have been received for the St. Johns River Yard at Jacksonville, Fla., and final sale arrangements are in early prospect. The facilities at this yard are valued at $16,145,471 and the land at $1,375,010.

The McClosky yard at Tampa, Fla., is also in process of sale. The land is desired by the City of Tampa, which is cooperating with the present operator in a bid for the whole property. Facilities here are valued at $6,478,831 and the land at $245,225.

A part of the New England yard at South Portland, Me., is in process of disposal to the Greater Portland Development Commission. Part of the yard is subject to an option and the right of first refusal held by the Todd interests from whom the yard was purchased and to whom it will probably be returned. The facilities here are valued at $22,273,278 and the land at $1,027,763.

Disposal action is also approaching completion in the case of the Walsh-Kaiser yard at Providence, R. I., which is owned jointly by the Maritime Commission and private industry. The facilities are valued at $25,787,067 and the land at $297,310. The disposal is being made by the Maritime Commission without formal declaration of surplus but with approval of surplus property officials. The case involved a complex situation with respect to condemnation of land owned by the City of Providence and other owners. Acceptance of the City of Providence's offer to buy the land was recommended by the Maritime Commission after it was shown that (1) the government has no further use for the property; (2) no other offers for it have been received; (3) disposition to any other purchaser would involve the government in continued litigation and considerable expense; (4) the sale is in accordance with the intent of the Surplus Property Act to give preference to states and municipalities in acquiring surplus; and (5) the sale would stimulate industry and employment.

WAC also announced that it appears unlikely that the Kaiser-Richmond No. 3 yard will be declared surplus in the immediate future since it is still needed for repair purposes.

AMERICAN IRON AND STEEL INSTITUTE
CAPACITY, PRODUCTION AND SHIPMENTS

Period DECEMBER - 1945

Steel Products	Number of companies	Items	Maximum Annual Potential Capacity Net Tons	Current Month: Production Net Tons	Current Month: Production Per cent of capacity	Current Month: Shipments (Net Tons) Total	Current Month: Shipments (Net Tons) To members of the industry for conversion into further finished products	To Date This Year: Production Net Tons	To Date This Year: Production Per cent of capacity	To Date This Year: Shipments (Net Tons) Total	To Date This Year: Shipments (Net Tons) To members of the industry for conversion into further finished products
Ingots, blooms, billets, tube rounds, sheet and tin bars, etc.	52	1	xxxx	xxxx	xxx	364,509	163,708	xxxx	xxx	6,874,314	2,149,626
Structural shapes (heavy)	11	2	9,580,550	327,326	42.4	331,121	xxxx	3,549,267	39.3	3,548,703	xxxx
Steel piling	4	3		17,053		20,789	xxxx	217,079		217,336	xxxx
Plates (sheared and universal)	27	4	17,841,320	432,356	28.6	431,124	43,860	7,202,585	40.4	7,062,329	554,199
Skelp	6	5	xxxx	xxxx	xxx	62,305	21,374	xxxx	xxx	744,545	365,560
Rails—Standard (over 60 lbs.)	4	6	3,669,000	187,978	60.4	190,515	xxxx	2,252,797	61.4	2,224,148	xxxx
—All other	5	7	512,000	11,407	26.3	13,657	xxxx	164,468	32.1	170,055	xxxx
Splice bars and tie plates	12	8	1,745,960	52,334	35.4	57,373	xxxx	751,645	43.1	779,057	xxxx
Track spikes	10	9	349,400	13,898	46.9	15,757	xxxx	158,586	45.4	165,038	xxxx
Hot Rolled Bars—Carbon	39	10	xxxx	608,875	xxx	514,756	79,461	8,251,356	xxx	6,603,149	1,022,743
—Reinforcing—New billet	13	11	xxxx	81,414	xxx	84,693	xxxx	737,209	xxx	752,710	xxxx
—Rerolled	14	12	xxxx	4,804	xxx	6,204	xxxx	76,877	xxx	85,006	xxxx
—Alloy	25	13	xxxx	165,841	xxx	144,544	10,254	2,640,084	xxx	1,965,904	219,798
—Total	46	14	22,381,700	860,934	45.4	750,197	89,715	11,705,526	52.3	9,406,769	1,242,541
Cold Finished Bars—Carbon	24	15	xxxx	113,421	xxx	108,752	xxxx	1,634,126	xxx	1,614,136	xxxx
—Alloy	25	16	xxxx	18,960	xxx	15,858	xxxx	366,662	xxx	326,173	xxxx
—Total	32	17	3,015,910	132,381	51.8	124,590	xxxx	2,000,788	66.3	1,940,309	xxxx
Tool steel bars	17	18	273,010	7,744	33.5	7,893	xxxx	122,153	44.7	122,149	xxxx
Pipe & Tubes—Butt weld	16	19	2,232,520	125,449	66.3	130,991	xxxx	1,541,532	69.0	1,525,350	xxxx
—Lap weld	9	20	830,200	28,084	39.9	30,113	xxxx	490,579	59.1	503,951	xxxx
—Electric weld	11	21	1,570,900	57,485	43.2	50,378	xxxx	970,369	61.8	857,478	xxxx
—Seamless	16	22	3,377,700	187,943	65.6	149,344	xxxx	2,804,961	83.0	2,235,294	xxxx
—Conduit (cap. & prod. incl. above)	7	23	xxxx	xxxx	xxx	7,762	xxxx	xxxx	xxx	88,112	xxxx
—Mech. tubing (cap. & prod. incl. above)	12	24	xxxx	xxxx	xxx	48,249	xxxx	xxxx	xxx	669,130	xxxx
Wire rods	27	25	7,266,670	355,708	57.7	108,155	33,156	4,485,380	61.7	1,306,603	444,210
Wire—Drawn	41	26	5,664,690	275,221	57.3	163,195	9,282	3,481,224	61.5	2,059,214	117,046
—Nails and staples	19	27	1,253,360	48,570	45.7	49,720	xxxx	597,725	47.7	602,558	xxxx
—Barbed and twisted	15	28	539,610	18,267	39.9	18,366	xxxx	234,126	43.4	234,209	xxxx
—Woven wire fence	16	29	1,113,860	33,863	35.9	34,167	xxxx	375,467	33.7	373,920	xxxx
—Bale ties	12	30	149,700	6,565	51.7	6,749	xxxx	74,957	50.1	82,609	xxxx
Black Plate—Ordinary	9	31	xxxx	xxxx	xxx	83,491	2	xxxx	xxx	633,439	4,805
—Chemically treated	8	32	465,000	14,216	36.1	12,323	xxxx	128,134	27.6	114,949	xxxx
Tin and Terne Plate—Hot dipped	10	33	3,793,850	134,949	42.0	145,836	xxxx	1,968,804	51.9	2,060,778	xxxx
—Electrolytic	10	34	2,231,850	59,729	31.6	63,730	xxxx	867,445	38.9	861,634	xxxx
Sheets—Hot rolled	30	35	19,197,320	1,172,645	72.1	544,831	46,156	13,801,751	71.9	6,782,952	483,078
—Cold rolled	12	36	7,131,460	452,219	74.8	302,115	xxxx	4,758,045	66.7	2,891,180	xxxx
—Galvanized	16	37	2,915,130	122,230	49.5	130,471	xxxx	1,690,885	58.0	1,707,292	xxxx
Strip—Hot rolled	24	38	7,055,390	200,388	33.5	135,994	24,806	2,622,886	37.2	1,643,111	279,048
—Cold rolled	35	39	3,119,850	105,767	40.0	104,429	xxxx	1,349,272	43.2	1,275,670	xxxx
Wheels (car, rolled steel)	5	40	319,400	23,704	87.5	24,972	xxxx	291,106	91.1	292,637	xxxx
Axles	6	41	408,170	10,285	29.7	11,002	xxxx	145,185	35.1	147,927	xxxx
All other	5	42	190,490	3,529	21.9	3,348	xxxx	45,038	23.6	41,719	xxxx
TOTAL STEEL PRODUCTS	152	43	xxxx	xxxx	xxx	4,729,561	432,059	xxxx	xxx	62,246,468	5,640,113
Effective steel finishing capacity	152	44	67,310,000	xxxx	xxx	xxxx	xxxx	xxxx	xxx	xxxx	xxxx
Percent of shipments to effective finishing capacity	152	45	xxxx	xxxx	xxx	75.3%	xxxx	xxxx	xxx	84.1%	xxxx

Washington Comment

(CONTINUED FROM PAGE 74)

searchers, scientists and technologists whose official business it is to give information about which minerals are needed and how to get them; adopt two recommended programs, one for regional development and another for exploration of the continental shelf (the latter being all of the ocean floor around the United States and its territories that is covered by no more than 600 ft of water, the whole area about 827,000 sq miles).

* * *

GI'S in the American zone of occupation in Germany are brushing up on their old trades or are being introduced to their future activity for the day when they return to the United States and civilian life. In the giant plant at Heidenheim where 88-mm guns were built for the Wehrmacht, the 7th Army Ordnance Technical School has been opened to all American soldiers interested in any of the nine phases of technical training. The four-week courses are devoted to internal combustion engine, diesel engine, general automotive, carburetion, ignition, welding, body and fender, machine shop and watchmaking. Certificates are given at the conclusion of the course. All instruction is along civilian lines.

At present there are 50 instructors, all enlisted men carefully chosen from 7th Army Ordnance units. It was pointed out by Col. Harold E. Hopping, Ordnance officer of the 7th Army that they are all specialists in their work and volunteered for their assignments. Methods of instruction emphasize practical operations rather than theory and both basic and advanced students have equal opportunity.

* * *

With the exception of the United States, Canada, the Union of South Africa, and a few other countries not in the actual combat zones during the war, only limited progress had been made by the end of 1945 in lifting wartime controls and restrictions on foreign trade, according to the Dept. of Commerce.

Resumption of trade with the areas formerly under Axis control has been slow and uneven and there has as yet been little concerted effort to facilitate the general revival and expansion of international trading through harmonizing the diverse commercial programs of the individual countries.

However, the prospect for greater progress in the international trade field during 1946 was considerably improved by a number of developments late in 1945. These comprise the conclusion of the Anglo-American economic negotiations, including the proposed credit agreement, the establishment of the International Monetary Fund and the International Bank for Reconstruction and development, and the proposal by the United States, with British support, for an international conference on trade and employment in 1946.

Positive action was taken by the substantial enlargement of the loanable funds of the Export-Import Bank and by Canada's new export credit facilities. As a result, these two countries were able to finance on credit former lend-lease goods and also relief supplies for war-ravaged countries. Sweden and Switzerland also facilitated restoration of international commerce through extension of substantial official credits.

Most countries, however, have felt that they could not restore unrestricted conditions until they could make domestic readjustments and in some cases include financial arrangements with supplying countries. The changes in the measures for foreign trade control actually made during 1945 varied considerably in the different regions of groups of countries according to their special circumstances and immediate objectives.

* * *

Shipyards To Be Retained in Commission By U. S. Navy

(A) *Pre-Pearl Harbor Yards*

Alabama Shipbuilding & Drydock Co., Mobile
Bath Iron Works Corp., Bath, Me.
Bethlehem Steel Co., Quincy, Mass.
Bethlehem Steel Co., San Francisco
Bethlehem Steel Co., San Pedro, Calif.
Cramp Shipbuilding Co., Philadelphia
Electric Boat Corp., New London, Conn.
Federal Shipbuilding & Drydock Co., Kearny, N. J.
Los Angeles Shipbuilding & Drydock Co., San Pedro, Calif.
Newport News Shipbuilding & Drydock Co., Newport News, Va.
New York Shipbuilding Corp., Camden, N. J.
Tampa Shipbuilding Co., Inc., Tampa, Fla.

(B) *Wartime Yards*

American Bridge Co., Ambridge, Pa.
Bethlehem Steel Co., Baltimore
Bethlehem Steel Co., East Boston, Mass.
Bethlehem-Hingham Shipyard, Inc., Hingham, Mass.
Bethlehem Steel Co., Hoboken, N. J.
Brown Shipbuilding Co., Houston
Charleston Shipbuilding & Drydock Co., Charleston, S. C.
Consolidated Steel Corp., Orange, Tex.
Bravo Corp., Neville Island, Pa.
Bravo Corp., Wilmington, Del.
Everett Pacific Co., Everett, Wash.
Federal Shipbuilding & Drydock Co., Newark, N. J.
General Engineering & Drydock Co., Alameda, Calif.
Maryland Drydock Co., Baltimore
Merrill-Stevens Drydock & Repair Co., Jacksonville, Fla.
Norfolk Shipbuilding & Drydock Co., Norfolk, Va.
Savannah Machinery & Foundry Co., Savannah, Ga.
Todd-Galveston Drydock, Inc., Galveston, Tex.
Todd-Johnston Drydock, Inc., New Orleans (Morgan City)
Todd-Pacific Shipyards, Inc., Seattle
Todd-Pacific Shipyards, Inc., Tacoma, Wash.
Todd Shipyards, Brooklyn Div., Brooklyn
Todd Shipyards, Hoboken, N. J.
Todd Shipyards, Seattle
United Engineering Co., Ltd., Alameda, Calif.

Shipyards To Be Retained By U. S. Maritime Commission

(A) *Pre-Pearl Harbor Yards*

Sun Shipbuilding & Drydock Co., Chester, Pa. (temporarily).

(B) *Wartime Yards*

Bethlehem-Alameda Shipyard, Alameda, Calif.
Kaiser-Vancouver, Vancouver, Wash.
North Carolina Shipbuilding Co., Wilmington, N. C.
Todd-Houston Shipbuilding Corp., Houston (temporarily).

Potentially Disposable Shipyard Facilities

Representing Government Investment of $5 Million or More

(A) *Government-Owned Facilities in Privately-Owned Yards*

Bethlehem-Fairfield Shipyards, Baltimore
Bethlehem Steel Co., Staten Island, N. Y.
Consolidated Steel Corp., Wilmington and Long Beach, Calif.
Gulf Shipbuilding Co., Chickasaw, Ala.
Ingall Shipbuilding Corp., Pascagoula, Miss.
Moore Drydock Co., Oakland, Calif.
Permanente Metals, Yard No. 1, Yard No. 2, and Prefabricating Plant (Todd-California), Richmond, Calif.
Western Pipe & Steel Co., San Pedro, Calif.

(B) *Maritime Commission Yards*

Owned Outright

J. A. Jones Construction Co., Brunswick, Ga.
J. A. Jones Construction Co., Panama City, Fla.
Kaiser-Richmond No. 3, Richmond, Calif.
Marinship Corp., Sausalito, Calif.
McClosky & Co., Tampa, Fla.
New England Shipbuilding Co., South Portland, Me.
Oregon Shipbuilding Co., Portland, Oreg.
St. Johns River Shipbuilding Co., Jacksonville, Fla.
Southeastern Shipbuilding Co., Savannah, Ga.

Private Interest in Land

California Shipbuilding Co., Wilmington, Calif.
Delta Shipbuilding Co., New Orleans
Kaiser-Swan Island, Portland, Ore.
Walsh-Kaiser Co., Providence, R. I.

(C) *Navy-Owned Yards*

Owned Outright

Chicago Bridge & Iron Co., Seneca, Ill.
Missouri Valley B. & I. Co., Evansville, Ind.

Private Interest in Land

Pullman-Standard Car Mfg. Co., Chicago

Says Imports Will Be A Greater Benefit To Nations Than Exports

Pittsburgh

• • • **Imports are a** greater benefit to the economy of a nation than exports, George W. Wolf, president of the U. S. Steel Export Co., stated here recently in an address before the Institute of Business and Economic Problems in a Private Enterprise Economy at the University of Pittsburgh.

In the talk, sponsored by the University and the Pittsburgh Chamber of Commerce, Mr. Wolf pointed out that the final purpose of organized industry and commerce is to place at the disposal of man the largest possible amount of needed and desired economic goods, and he stressed that, "This optimum level in the enjoyment of wealth can be attained solely through imports of foreign commodities and services."

"The prosperity of a nation is not measured by its accumulation of precious metals and currencies," he said, "but by the essentialities and amenities of life available to its people. Exports are of importance inasmuch as they contribute to provide the means for the procurement of both."

Before the war, imports were largely duty-free or carried only nominal duties, Mr. Wolf said, adding "when we talk of increasing our importations by lowering tariffs, we are talking about approximately 30 pct of our total imports."

"A great increase in the imports of dutiable goods is a challenge and an opportunity not only for us but all the world beyond us," he added.

Mr. Wolf quoted the outline of free enterprise recorded by the American delegation to the International Business Conference, held at Rye, New York, in November, 1944, which, after acknowledging the various forms of enterprise in the world said:

"Yet the fact is clear that in America today enterprise is more solidly in private hands, that here it is freer, and that here it is more truly competitive, than in many other lands. And to this, we believe, is due the superb vitality which has enabled our nation to perform the American miracle of production over the years."

In concluding Mr. Wolf said, "Our peculiarly American system has made America what it is, and that same system so scorned in some quarters, has saved the world twice in one generation."

Places 22 Patents On Register for License

Washington

• • • **The Dept. of Commerce** has announced that 22 patents owned by the U. S. Government as represented by the Secretary of the Interior are to be placed on the Register of Patents Available for Licensing which is maintained by the Patent Office. These are the first patents owned by the government which have been included on the Register. Warner W. Gardner, solicitor for the Interior Dept., in a letter to Casper W. Oorms, patent commissioner, said that the patents are available for licensing upon a non-exclusive, royalty-free basis.

Among the patents listed are the following: Preparation of Cobalt-Copper Catalysts; Electrolytic Process for Extraction of Electrolytic Manganese; Treatment of Ores; Methods of Protecting Boilers and the Like Against Embrittlement; Separation of Feldspar from Quartz; Process for the Concentration of Boron; Recovery of Metallic Magnesium; Core Drilling; Production of Low Sulphur Sponge Iron and Beneficiation of Beryllium Ores.

Applications to use the patents should be addressed to the solicitor, Dept. of the Interior, Washington 15, D. C.

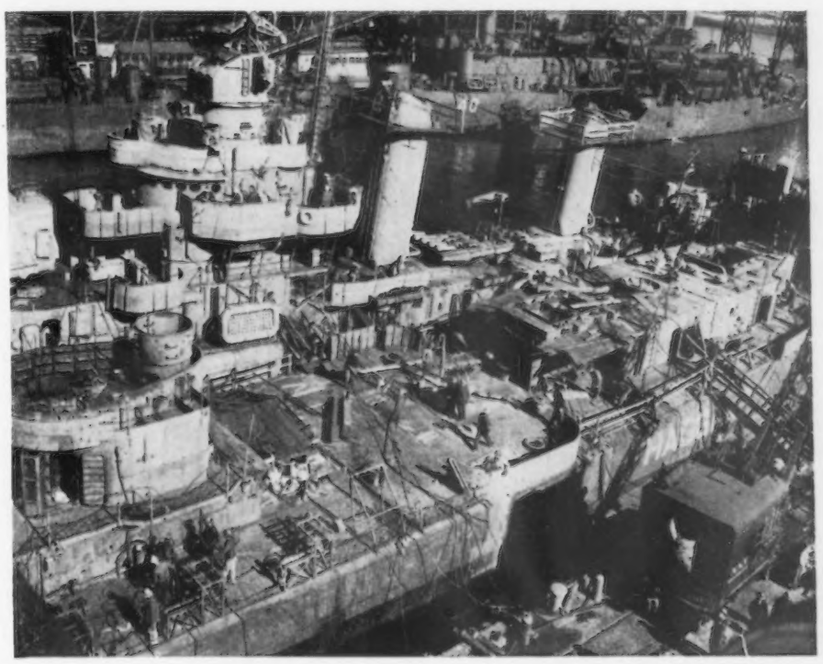
Improves Ore Facilities

Cleveland

• • • **Ore handling** facilities here will soon be much improved by the Erie Railroad's installation of a new 17-ton Hulett unloading machine at the Cleveland ore dock. Shipped here from Chicago, the new Hulett will be in operation by the start of the 1946 season. It replaces four Browning electric machines of smaller capacity which were installed in 1906.

During 1945, the dock handled 908,475 tons of ore, and has unloaded as much as 40,008 gross tons into 575 cars in a single day. In addition to its ore handling facilities on the lake front, the Erie has a million-ton ore storage dock at North Randall, Ohio.

SCRAPS DESTROYER: *Workmen dismantle the* USS Haggard *at the Navy Yard in Portsmouth, Va., which is to be used for scrap. The destroyer was a victim of a Jap "Kamikaze" attack off Okinawa in April,* 1945.



Industrial Briefs...

• MOTION PICTURE—The Meehanite Metal Corp. has available for use by interested societies, groups, or companies, upon request, a motion picture entitled "Meehanite Means Better Castings." Educational in nature, it gives a comprehensive story of the engineering characteristics of Meehanite castings and their industrial applications.

• NEW RESIN PLANT — Announcement was made in Baltimore recently that the Glenn L. Martin Co. was ready to manufacture its new elastic plastic, Marvinol resin, and has authorized the construction of a $1,500,000 plant. The new plant, which will be in production by next fall, ultimately will have an annual capacity of about 11,000,000 lb of Marvinol type polyvinyl resins, from which a wide assortment of end-products will be made by manufacturers.

• ACQUISITION—Republic Steel Corp. has acquired the machinery, equipment and inventory of Westland Drawn Steel Co., Los Angeles, Calif., and will operate the facilities as a part of its Union Drawn Steel Div., headquarters of which are at Niles, Ohio. Republic has also taken a short-term lease on Westland Drawn Steel's buildings and property, but plans call for the removal of machinery and equipment to another location in the near future.

• NEW TOOL FIRM—Acorn Tool & Mfg., Inc., Cincinnati, has been formed to produce jigs, tools, dies, fixtures, and to engage in some light manufacturing.

• TO REPRESENT—W. G. Winslow has been appointed South American sales representative for the Falk Corp., Monitor Controller Co., Reliance Electric & Engineering Co., and Union Chain & Mfg. Co. Mr. Winslow, whose headquarters will be in Sao Paulo, Brazil, will establish distributors in several industrial centers in the South American equipment markets.

• CARBUILDING GOES ON — Despite material shortages the Pullman-Standard Car Mfg. Co. expects to have work on new passenger cars for four large railroads flowing along its Chicago shop assembly lines this month. Assembly work on orders for three roads is already underway, and back-shop operations on additional orders have been started.

• PAN AMERICAN BUYS — Pan American Alloys, Inc., of New Orleans, manufacturers of aluminum alloy castings, have purchased the building formerly operated by the National Machine & Foundry Co. at Scottdale, Pa.

• BUYS FOUNDRY — International Harvester Co. has taken over the operation of the foundry of the General Malleable Corp., Waukesha, Wis., for production of malleable iron casting in the farm machinery div.

• BUYS FURNACE CO. — The Foundry Equipment Co. has acquired the McCann Furnace Co., Cleveland, and will continue the manufacture and sale of the McCann furnace and oven equipment. All activities will be combined at the main offices and plant of the Foundry Equipment Co., in Cleveland.

• MERGER — Officers and directors of Michigan Die Casting Co. of Detroit and Gerity-Adrian Mfg. Corp. of Adrian, Mich., have approved a merger of their companies. Stockholders of both companies will meet on Mar. 4 to vote upon ratification of the agreement.

Gallup Poll

(CONTINUED FROM PAGE 99)

Criticism of President Truman by labor leaders in recent weeks has had no marked effect upon his popularity as a 1948 presidential possibility among the rank and file of Democratic labor union voters.

Among labor union voters in the survey naming a Democratic possibility as their choice, Mr. Truman is the overwhelming favorite for the White House in 1948.

Mr. Truman is the choice of 65 pct of labor union Democratic voters in the survey and the choice of 67 pct of all Democratic voters in the country.

Henry Wallace, the favorite of labor leaders for the vice presidential nomination in 1940, runs second. He is the choice of about two in every ten.

After Wallace in the list of Democratic choices of labor union voters come Gen. Dwight D. Eisenhower, Secretary of State James F. Byrnes, former Secretary of State Edward R. Stettinius, Jr., Fiorello H. LaGuardia, James Farley, and Mayor William O'Dwyer of New York.

The results of the survey stem from replies to the question:

"What man would you like to see elected president of the country in 1948?"

	Dem. Union Voters Pct	All Dem. Voters Pct
Truman	65	67
Wallace	19	15
Eisenhower	4	6
Byrnes	3	3
Stettinius	2	2
LaGuardia	1	1
Farley	1	1
O'Dwyer	1	*
Barkley	*	1
Others	4	4

* Less than 1 pct

Plant Declared Surplus

Cleveland

• • • **The Cleveland plant of Van der Horst Corp., an affiliate of Dresser Industries, Inc., has been closed and declared surplus by the Navy to the War Assets Corp. for sale. During the war, the plant was used for porous chromium plating of diesel cylinder liners, known as the Van der Horst process. F. H. Biewenner, formerly general manager of the firm, said about 200 employees were laid off and operations transferred to Olean, N. Y.**

Construction Steel...

New York

• • • **Fabricated steel awards this** week included the following:

660 Tons, Richmond, Ind., Chesapeake & Ohio railroad bridge, to American Bridge Co., Pittsburgh.

500 Tons, Kenosha, Wis., American Brass Co. plant extension; Austin Co., Cleveland, general contractor, will fabricate.

500 Tons, Montgomery, Ill., United Wallpaper Co. plant expansion, to American Bridge Co., Pittsburgh.

400 Tons, San Antonio, Tex., Neisner Bros. Inc. department store, to American Bridge Co., Pittsburgh.

375 Tons, Minneapolis, development building, Dayton Co., to American Bridge Co., Pittsburgh.

375 Tons, Chicago, West 47th St. underpass and 124th St. overpass, to American Bridge Co., Pittsburgh.

290 Tons, Rule and Old Glory, Tex., state highway bridge, to Austin Bros., Dallas.

285 Tons, Madison, Wis., state highway bridge, to American Bridge Co., Pittsburgh.

200 Tons, Farley, Mo., Chicago, Burlington, & Quincy railroad bridge, to American Bridge Co., Pittsburgh.

120 Tons, Clairmont, N. H., mill for Dartmouth Woolen Mills to Phoenix Bridge Co., Phoenixville, Pa.

• • • **Fabricated steel inquiries** this week included the following:

1894 Tons, Los Angeles and Long Beach, four bridges on Pacific Coast Highway, California Div. of Highways, bids due Mar. 14.

837 Tons, Elizabeth, N. J., express highway Route 25 Sections 32A and 16C, New Jersey Highway Department, bids taken Feb. 18.

570 Tons, Eau Claire, Wis., state highway bridge.

408 Tons, Northumberland County, Pa., bridges, Pennsylvania Dept. of Highways, bids due Mar. 5.

341 Tons, Los Angeles, Steel overhead crossing, Anaheim St. approach road to terminal Island Freeway at Nicholson Ave., California Div. of Highways, bids due Mar. 14.

300 Tons, Louise, Ariz., Davis Dam fixed wheel gate frames; bids to U. S. Bureau of Reclamation.

225 Tons, Kankakee, Ill., American-Marietta Co. plant building.

180 Tons, Cameron County, Pa., bridge, Route 105, Section 5A, bids due Feb. 26.

175 Tons, Philadelphia, alterations and additions to Provident Trust Building.

• • • **Reinforcing bar** awards this week included the following:

200 Tons, Los Angeles, Ross & Wiener loft building, to Soule Steel Co., San Francisco.

200 Tons, El Monte, Calif., Clayton Mfg. Co. factory, to Soule Steel Co., San Francisco.

120 Tons, Los Angeles, Alpha Beta Food Market, to Soule Steel Co., San Francisco.

115 Tons, Los Angeles, Toberman factory, to Ceco Steel Products Corp., Omaha, Neb.

100 Tons, Los Angeles, Rosenberg factory, to Soule Steel Co., San Francisco.

• • • **Reinforcing bar** inquiries this week included the following:

1312 Tons, Los Angeles, Channel excavation Aliso St. to Alhambra, Los Angeles River, U. S. Engineer Office, Los Angeles, bids due Mar. 18.

950 Tons, Los Angeles, Channel excavation N. Broadway to Alhambra, Los Angeles River, U. S. Engineer Office, Los Angeles, bids due Mar. 13.

586 Tons, Los Angeles and Long Beach, four bridges on Pacific Coast Highway, California Div. of Highways, bids due Mar. 14.

133 Tons, San Jose, Separation structure, Bay Shore Freeway at Santa Clara St. California Div. of Highways, bids due Mar. 13.

109 Tons, Northumberland County, Pa., bridges, Pennsylvania State Highway Department, bids due Mar. 5.

War Dept. Will Employ Negotiated Contracts For Secret Work Only

Washington

• • • **The War Dept. has put** into effect many of the procurement changes outlined in THE IRON AGE, Feb. 14, pp. 120-21, pending enactment of legislation, which would give authority for the broad procurement policy for all government agencies.

The War Dept. action was taken by means of an amendment to Procurement Regulation 2, effective March 3. Under this amendment, negotiated contracts will be used for secret research and developmental procurement. However, the Chiefs of the Technical Services are now required to formally advertise intentions to purchase standard stock and subsistence supplies.

After sealed bids are submitted, fixed-price contracts will be awarded to the lowest responsible bidder. Manufacturers can request to be placed on bidder's lists and will thereafter receive invitations to bid. Specifications will be contained in the invitations to bid.

Contractors will be allowed normal lead-time. Creation of new facilities will be avoided, as will cross-hauling and long-hauling.

Small firms, defined in the regulation as those employing less than 500 wage earners, will be given quite a break in the new regulation. A 15 pct price premium has been authorized for small firms, when the need can be justified by higher costs, where it may be necessary to place prime contracts. A higher premium will be authorized if necessary. This is broader than the authority requested in the proposed legislation, which does not set any price premium for small business. Cost plus percentage of cost contracts have been eliminated. Cost-plus-a-fixed-fee contracts may only be used for new and secret items.

While subcontracting is permitted and encouraged, profits may not be made from subcontracting.

War Dept. contracts will be subject to repricing until the act authorizing this procedure expires.

FORERUNNER: *Scenes like this are expected to be commonplace when steel mills reach full time production. Outlook for steel construction is said to be the best in years.*

MACHINE TOOLS

. . . News and Market Activities

Surplus, Shutdowns Hinder Business

Cleveland

• • • **A bit mournful** over news of reconversion, Director John W. Snyder's demotion and feeling the effect of surplus property blows to the solar plexus, the machine tool industry was understandably wondering whether the preliminary reports on January business represented a tentative outline of things to come.

Based on figures representing more than 95 pct of the total reports, shipments for January amounted to about $27,900,000, up considerably from December's $23,200,000. New orders stood at $31,300,000 as compared with $31,600,000 in December. Cancellations took a sizeable jump to $2,900,000 in January compared to $1,700,000 for the previous month. Possibly reflecting increased shipments, unfilled orders amounted to $177,000,000 for January as compared with December's $179,000,000. Shipments for the year 1945 were $407,000,000.

As the preliminary figures indicate, shipments increased slightly, orders fell off a little and cancellations took a slight turn upward. As matters stand now, February shipments stand a good chance of being hurt by shutdowns, even though the steel strike has been settled. Some sources predict that 1946 business will be in the neighborhood of $350,000,000; others feel the machine tool industry's pattern will look something like $250,000,000. But it is more than likely that the real total will lie somewhere in between, with possibilities of a flat 10 pct price increase lurking around Mar. 1.

By and large, the builders are feeling the effect of the surplus and with a tremendous number of government-owned machines coming out, it is not unlikely that many of them are losing as much to the surplus as they are getting in new business. According to competent observers, the number of builders thus affected is increasing and very possibly the ration of business along with it.

In regard to surplus machines, it should be noted that as the number of machines declared surplus grows larger, the percentage that the War Assets Corp. can sell grows smaller, because of types and other factors. This situation, according to some sources, will be bad in another three or four months.

Dealers report that they are getting some business and that things, in view of troubled conditions generally, are holding up reasonably well. And while inquiries are not developing as fast as they should, with business fairly good through the strike period, some dealers feel there is no reason to expect business to be worse now that the steel strike is over.

Some observers believe that many new machine tool designs will be brought out in the hope of designing around the surplus and stimulating business, a process that requires a long time. Whether or not this move might become general is open to speculation, since the development of high-speed steel was supposed to change the design of machine tools, and as these same sources point out, a generation went by without much change. New types sometimes require a lot of selling, and although there is a definite potential to redesigning, competition is always a factor.

Machine tool dealer relations with War Assets Corp. still leave something to be desired, according to a recent survey of a number of dealers which showed that more than half of them feel that the operations of WAC could be much improved upon. In other words, dealers are still doing a lot of work for very little money, by their own admission. At the same time, WAC storehouses are crowded and while the agency may on occasion suggest that they don't want to take some undesirable items into stock, they aren't scrapping anything to any great extent and the job of surplus machine tool disposal increases accordingly..

* * *

Two AFL affiliates have won collective bargaining rights at the Cleveland Automatic Machine Co. in the first National Labor Relations Board election in which personnel on military leave were allowed to vote. By a vote of 201 to 40, the International Assn. of machinists won the right to represent 508 production, maintenance and service employees. By five votes to none, the Patternmakers League of North America won rights for seven patternmakers and apprentices.

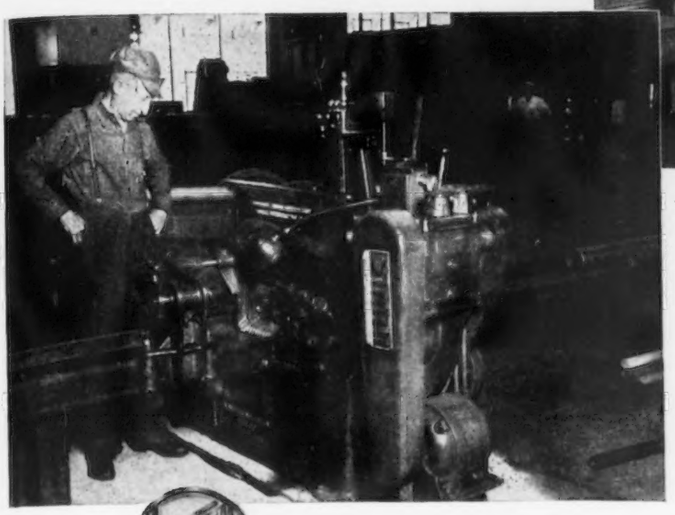
Surplus Machine Tools

• • • **In a recent War Assets Corp. report there appeared a tabulation of machine tools acquired and sold in 1945, which provides, if nothing else, an interesting commentary on the surplus situation. The figures are given as follows:**

Period Through	Acquired For Disposal	DISPOSED OF		
		Cost to Government	Sold For	Pct of Total Cost
June 30, 1945	$214,902,000	$75,550,000	$43,934,000	35.4
July	14,673,000	6,418,000	3,659,000	35.6
August	13,891,000	5,647,000	2,095,000	36.0
September	41,097,000	5,828,000	1,996,000	32.8
October	107,170,000	12,094,000	5,299,000	27.0
November	146,720,000	16,467,000	7,702,000	22.7
December (½ month)	121,922,000	15,440,000	7,509,000	20.8
Total to December 16, 1945	$660,375,000	$137,444,000	$71,693,000	20.8

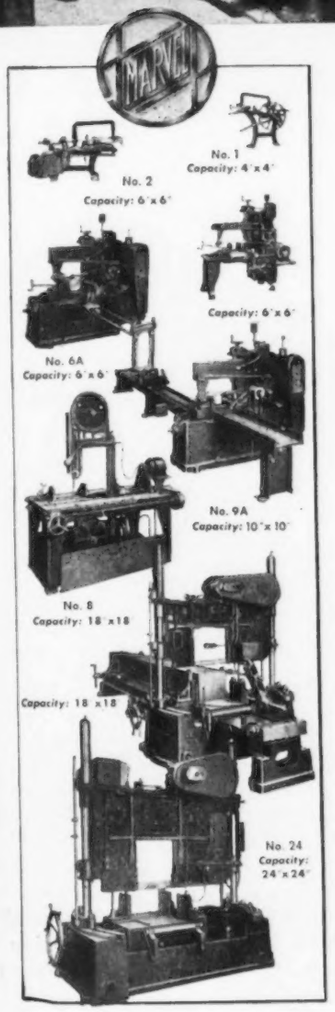
The right hand column, percentage rate of disposal, is calculated on the month to month accumulated totals, columns 1 and 2. Note the progressive reduction in the rate of disposal since last August.

RAILWAYS ARE *Streamlining* THEIR SHOPS TOO!



(Above)
MARVEL No. 9A Production Saw automatically cutting-off hollow iron into staybolts; 1" x 9", 30 bolts to the cut.

(Left)
Cutting accurate lengths from 3½" steel tubing for spring and brake hanger bushings.



Railway shops are "re-converting" not to new products but to newer and more efficient methods.

Today, in the Paducah shops of the Illinois Central, for example, much cutting-off work is being done with MARVEL No. 9A Production Saws that feed, measure and cut off identical lengths automatically with no more operator attention than is required by an automatic screw machine.

Operating "automatically," the MARVEL No. 9A Saw illustrated above, has cut-off as many as 300 pieces of 1" round staybolt stock in a single hour. Supervision at the Paducah shops tells us that the machine paid for itself in the first 30 days and has been piling up dividends ever since. These extremely accurate and fast saws are not limited to production cutting-off work, because at any point in a "run," the automatic bar push-up can be disengaged, a miscellaneous cut made, and the production run resumed by merely re-engaging the bar push-up clutch.

The MARVEL System of Metal Sawing comprises 9 different types of metal-cutting saws; provides the complete answer to most metal sawing problems.

ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

5700 Bloomingdale Ave. Chicago 39, U.S.A.

***Eastern Sales Office:* 225 Lafayette St., New York 12, N. Y.**

MARVEL SAWS

NONFERROUS METALS

. . . News and Market Activities

Copper and Brass Strike Grows

New York

• • • **The strike picture** in the copper and brass industry is growing darker as time passes with a growing list of mine producers and fabricators out of production. It is revealed that most properties of the American Smelting & Refining Co., except zinc facilities and the Federated Smelting Division of the company, are to be struck next Monday. Among others, these plants include those at Baltimore, Tacoma, Wash., and Perth Amboy, N. J. Meanwhile, the Kennecott Copper Co., Utah mine, producer of 30 pct of domestic copper, is still out on strike.

Strikes continue at the brass mills in the Connecticut Valley, except at the Bridgeport Brass Co. whose workers accepted a 10 pct increase pending further developments in the industry strike. Now it is reported that the international executive committee of the Mine, Mill & Smelter Workers Union—CIO—has placed itself on record as opposing the settlement accepted by Bridgeport workers. However, there is some hope that the formula worked out in the steel wage-price controversy may be applied to brass fabricators. Nevertheless, the indications are that the situation may grow in intensity before a solution can be developed.

With domestic copper production way down as a result of the Kennecott and AS&R strikes, it is hard to predict what may be the effect on the Metals Reserve copper stockpile. Should the brass mills adjust their labor differences and the wire and cable companies no longer be affected by the electrical strike, renewed consumption of copper could conceivably exhaust the stockpile in about 5 months. There is little likelihood of this development, however, since if there is government mediation in the strike picture it will doubtless take all phases of the problem into consideration.

There has been a report of an offer by Scovill Brass Co. workers to accept an arrangement similar to the Bridgeport Brass Co. deal but this has been denied by the union officials.

o o o

Alcoa Signs with CIO For 19¢ an Hr Increase

Pittsburgh

• • • **After two days of** negotiation sessions between the CIO-USWA and the Aluminum Co. of America, Pittsburgh, a joint announcement was made on Feb. 16, by R. C. Turner, personnel director for Alcoa, and Clinton Golden, assistant to the president of the United Steelworkers, terminating the strike which had closed eight aluminum plants since Jan. 21 and calling for a general wage increase of 19¢ a hr for all employees within the bargaining units represented by the United Steelworkers. The increase is effective as of Feb. 17.

Under the agreement, employees of the eight plants involved will return to work at the earliest possible moment. Approximately 14,000 workers are affected by the settlement. The plants are located in Alcoa, Tenn., New Kensington, Pa.; Badin, N. C.; Mobile, Ala.; Detroit; Fairfield, Conn.; Edgewater, N. J.; and Bauxite, Ark.

The memorandum of understanding signed by representatives of the company and the union indicated that in postwar production, employees, will generally be scheduled on a 5-day, 40 hr per week basis.

The company said the settlement of 19¢ an hr "will not affect incentive or bonus earnings." Where incentive or bonus earnings are calculated on the basis of wage rates, such incentive or bonus earnings will continue to be calculated so as to provide the same incentive or bonus earnings as heretofore for the same production. Piece rates will be reset to reflect the above mentioned wage increase.

"The company and the union agree that the cooperation of all employees is necessary toward increased and improved productivity, toward the effective use of manpower and equipment, and toward improved manufacturing methods, and consequently pledge their wholehearted cooperation toward these objectives," the memorandum stated.

•

Beryllium Alloying Cost Down for Copper And Aluminum Products

Reading, Pa.

• • • **The beryllium copper** master alloy used by brass mills and brass foundries containing 4 pct beryllium, balance copper, has been reduced in price to $14.75 per lb of contained beryllium effective Feb. 11, it has been announced by the Beryllium Corp. of Pennsylvania here. This price reduction of $2.25 per lb is said to be based on the improved efficiency of the new plant which has been in operation for about a year and has roughly five times the capacity of the company's older plant facilities. The ore from which beryllium is reduced is reported to contain about 10 pct beryllium oxide resulting in the recovery of about 4 lb of beryllium per ton of ore.

The company's beryllium copper strip mill facilities are operating on relatively small orders which prevent corresponding reductions in cost for rolled products at this time.

Another price reduction just made by the company is in the master alloy containing 5 pct beryllium for the addition of that metal to aluminum die castings and foundry products. On 1000 lb orders for the master alloy, the price has been reduced to $30 per lb of contained beryllium from a former price of $47.

Several units of the aluminum industry have been studying the advantages of the use of beryllium in their products and it is reported that use of the alloy improves strength and resistance to tarnish. There is also some indication of some beneficial action on grain refinement.

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, del'd (Min. 10,000 lb)	15.00
Aluminum pig	14.00
Antimony, American, Laredo, Tex.	14.50
Beryllium copper, 3.75-4.25% Be; dollars per lb. contained Be	$14.75
Beryllium aluminum, 5% Be; dollars per lb. contained Be	$30.00
Cadmium, del'd	90.00
Cobalt, 97-99% (per lb)	$1.50 to $1.57
Copper, electro, Conn. valley	12.00
Copper, electro, New York	11.75
Copper, lake	12.00
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$ 3.25
Iridium, dollars per troy oz.	$90-$100
Lead, St. Louis	6.35
Lead, New York	6.50
Magnesium, 99.9 + %, carlots	20.50
Magnesium, 12-in. sticks, carlots	27.50
Mercury, dollars per 76-lb flask, f.o.b. New York	$103 to $106
Nickel, electro	35.00
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per oz.	$35.00
Silver, New York, cents per oz.	70.75
Tin, Straits, New York	52.00
Zinc, East St. Louis	8.25
Zinc, New York	8.65

Remelted Metals

(Cents per lb)

Aluminum, No. 1 Fdy. (No. 2)	9.00 to 10.00
Aluminum, deoxidizing No. 2, 3, 4	7.25 to 10.00
Brass ingot	
85-5-5-5 (No. 115)	13.25
88-10-2 (No. 215)	16.75
80-10-10 (No. 305)	16.00
No. 1 Yellow (No. 405)	10.25

Copper, Copper Base Alloys

(Mill base, cents per lb)

	Extruded Shapes	Rods	Sheets
Copper	20.87	....	20.37
Copper, H.R.	....	17.37	....
Copper drawn	....	18.37	....
Low brass, 80%	....	20.40	20.15
High brass	....	....	19.48
Red brass, 85%	....	20.61	20.36
Naval brass	20.37	19.12	24.50
Brass, free cut	....	15.01	....
Commercial bronze, 90%	....	21.32	21.07
Commercial bronze, 95%	....	21.53	21.28
Manganese bronze	24.00	....	28.00
Phos. bronze, A, B, 5%	....	36.50	36.25
Muntz metal	20.12	18.87	22.75
Everdur, Herculoy, Olympic or equal	....	25.50	26.00
Nickel silver, 5%	....	28.75	26.50
Architect bronze	19.12	....	....

Aluminum

(Cents per lb., subject to extras on gage, size, temper, finish, factor number, etc.)

Tubing: 2 in. O.D. x 0.065 in. wall 2S, 40c. (½H); 52S, 61c. (O); 24S, 67½c. *Plate:* 0.250 in. and heavier; 2S and 3S, 21.2c.; 52S, 24.2c.; 61S, 22.8c.; 24S, 24.2c.

Flat Sheet: 0.188 in. thickness; 2S and 3S, 22.7c. a lb.; 52S, 26.2c.; 61S, 24.7c.; 24S, 26.7c.

2000-lb. base for tubing; 30,000-lb. base for plate, flat stock.

Extruded Shapes: "As extruded" temper; 2000-lb. base, 2S and 3S, factor No. 1 to 4, 25.5c.; 14S, factor No. 1 to 4, 35c.; 17S, factor No. 1 to 4, 31c.; 24S, factor No. 1 to 4, 34c.; 53S, factor No. 1 to 4, 28c.; 61S, factor No. 1 to 4, 28½c.

The factor is determined by dividing perimeter of shape by weight per lineal foot.

Wire Rod and Bar: Base price; 17ST and 11ST-3, screw machine stock. Rounds: ¼ in., 28½c. per lb.; ½ in., 26c.; 1 in., 24½c.; 2 in., 23c. Hexagonals; ¼ in., 34½c. per lb.; ½ in., 28½c.; 1 in., 25½c.; 2 in., 25½c. 2S, as fabricated, random or standard lengths, ¼ in., 24c. per lb.; ½ in., 25c.; 1 in., 24c.; 2 in., 23c. 24ST, rectangles and squares, random or standard lengths, 0.093-0.187 in. thick by 1.001-2.000 in. wide, 33c. per lb.; 0.751-1.500 in. thick by 2.001-4.000 in. wide, 29c.; 1.501-2.000 in. thick by 4.001-6.000 in. wide, 27½c.

Magnesium

Sheet, rod, tubes, bars, extruded shapes subject to individual quotations. Metal turnings: 100 lb. or more, 46c. a lb.; 25 to 90 lb., 56c.; less than 25 lb., 66c.

NONFERROUS SCRAP METAL QUOTATIONS

†(OPA basic maximum prices, cents per lb., f.o.b. point of shipment, subject to quality, quantity and special preparation premiums—other prices are current quotations)

Copper, Copper Base Alloys

OPA Group 1†

No. 1 wire, No. 1 heavy copper	9.75
No. 1 tinned copper wire, No. 1 tinned heavy copper	9.75
No. 2 wire, mixed heavy copper	8.75
Copper tuyeres	8.75
Light copper	7.75
Copper borings	9.75
No. 2 copper borings	8.75
Lead covered copper wire, cable	6.00*
Lead covered telephone, power cable	6.04
Insulated copper	5.10*

OPA Group 2†

Bell metal	15.50
High grade bronze gears	13.25
High grade bronze solids	11.50*
Low lead bronze borings	11.50*
Babbitt lined brass bushings	13.00
High lead bronze solids	10.00*
High lead bronze borings	10.00*
Red trolley wheels	10.75
Tinny (phosphor bronze) borings	10.50
Tinny (phosphor bronze) solids	10.50
Copper-nickel solids and borings	9.25
Bronze paper mill wire cloth	9.50
Aluminum bronze solids	9.00
Soft red brass (No. 1 composition)	9.00
Soft red brass borings (No. 1)	9.00
Gilding metal turnings	8.50
Contaminated gilded metal solids	8.00
Unlined standard red car boxes	8.25
Lined standard red car boxes	7.75
Cocks and faucets	7.75
Mixed brass screens	7.75
Red brass breakage	7.50
Old nickel silver solids, borings	6.25
Copper lead solids, borings	6.25
Yellow brass castings	6.00
Automobile radiators	7.25
Zincy bronze borings	7.00
Zincy bronze solids	8.00

OPA Group 3†

Fired rifle shells	8.00
Brass pipe	7.25
Old rolled brass	6.75
Admiralty condenser tubes	7.25
Muntz metal condenser tubes	6.75
Plated brass sheet, pipe reflectors	6.25
Manganese bronze solids	7.00[1]
Manganese bronze solids	6.00[2]
Manganese bronze borings	6.25[1]

OPA Group 4†

Refinery brass	4.50*

*Price varies with analysis, [1] Lead content 0.00 to 0.40 per cent. [2] Lead content 0.41 to 1.00 per cent.

Other Copper Alloys

Briquetted Cartridge Brass Turnings	8.625
Cartridge Brass Turnings, Loose	7.875
Loose Yellow Brass Trimmings	7.875

Aluminum*

Plant scrap, segregated

2S solids	8.00
Dural alloys, solids 14, 17, 18, 24S 25S	4.00
turnings, dry basis	3.00
Low copper alloys 51, 52, 61, 63S solids	7.25
turnings, dry basis	5.75

Plant scrap, mixed

Solids	4.00
Turnings, dry basis	3.75

Obsolete scrap

Pure cable	8.00
Old sheet and utensils	6.00
Old castings and forgings	5.00
Pistons, free of struts	5.00
Pistons, with struts	3.00
Old alloy sheet	5.00

Magnesium*

Segregated plant scrap

Pure solids and all other solids, exempt Borings and turnings	1.50

Mixed, contaminated plant scrap

Grade 1 solids	3.00
Grade 1 borings and turnings	2.00
Grade 2 solids	2.00
Grade 2 borings and turnings	1.00

*Nominal.

Zinc

New zinc clippings, trimmings	6.50
Engravers, lithographers plates	6.50
Old zinc scrap	4.75
Unsweated zinc dross	5.00
Die cast slab	4.50
New die cast scrap	4.45
Radiator grilles, old and new	3.50
Old die cast scrap	3.00

Lead

Deduct 0.55c. a lb. from refined metal basing point prices or soft and hard lead including cable, for f.o.b. point of shipment price.

Nickel

Ni content 98+%, Cu under ½%, 23¢ per lb.; 90 to 98% Ni, 23¢ per lb. contained Ni.

ELECTROPLATING ANODES AND CHEMICALS

Anodes

(Cents per lb., f.o.b. shipping point in 500 lb. lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	25½
Electrodeposited	18⅞
Rolled, oval, straight	19½
Curved	20⅜
Brass, 80-20, frt. allowed	
Cast, oval, 15 in. or longer	23½
Zinc, cast, 99.99, 15 in. or longer	16¼
Nickel, 99 per cent plus, frt. allowed	
Cast	47
Rolled, depolarized	48
Silver, 999 fine	
Rolled, 100 oz. lots, per oz.	80

Chemicals

(Cents per lb., f.o.b. shipping point)

Copper cyanide, 1-5 bbls.	34.00
Copper sulphate, 99.5, crystals, bbls.	7.75
Nickel salts, single, 425 lb. bbls., frt. allowed	13.50
Silver Cyanide, 100 oz. lots, per oz.	0.6083
Sodium cyanide, 96 per cent, domestic, 100 lb. drums	15.00
Zinc cyanide, 100 lb. drums	33.00
Zinc sulphate, 89 per cent, crystals, bbls., frt. allowed	6.25

SCRAP

. . . News and Market Activities

Scrap Shortage to Last 4 to 6 Months

Pittsburgh

• • • **The scrap picture** for the next four to six months will be one of rather severe shortages, despite the fact that most mills are in a far better position today than they were when the steel strike started. With very few exceptions, mills have been taking scrap in right through the strike, laying it down in scrap yards or on the properties of subsidiary companies that are not involved in the steel strike.

One observer claims that price is the main factor in the procurement of scrap. When No. 1 scrap was no longer available at ceiling prices, low phos price offerings brought out very substantial quantities of scrap. This was not only true in the Pittsburgh district, but also in other areas.

Dealers on the other hand are extremely pessimistic about scrap supplies, pointing out that they can sell far more than can be purchased. As a matter of fact, a substantial percentage of the scrap moving in this area at the present time consists of scrap from government surpluses. Further, much of this type of material is now held in strike-bound plants, already sold, but awaiting the time it can be moved. Production scrap is practically non-existent.

A rather intensive sweep of the Eastern Seaboard and of the Southwest from Texas east to New Orleans has been made on scrap, with much of it moving into this area. The collection of remote scrap for shipment into Chicago from parts of Texas, where a flat price of $14.00 a ton, f.o.b. point of origin, may be paid, has been quite prevalent in the past month.

While mills have better supplies of scrap on hand than before the strike, scrap demands will be somewhat greater immediately following the strike than during normal operating periods. Supplies of hot metal will be somewhat limited at first and greater scrap charges will be needed to make up the difference. This will help drain off accumulated stocks. Then, until steel begins to move in sufficient volume to permit high rates of sustained operations in fabricators' plants and production scrap is forthcoming, a period of perhaps three to four weeks, scrap supplies are likely to be rather critical.

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PITTSBURGH—Mills here are in excellent shape, insofar as scrap supplies are concerned, to resume operations. All of them in this area have taken scrap in at least during part of the strike, and mills now have better stocks than at any time during the past six months. Much of it is in dealers yards and in railroad cars, while one company unloaded scrap on the property of one of its subsidiaries. In getting started, greater proportions of scrap to hot metal will be used, mainly because of the time lag in getting the hot metal from the blast furnaces. While mills are in a good position now on scrap, it is expected that this material will continue in short supply for at least another six months.

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CHICAGO—District mills resumed operations this week with close to 100,000 tons of scrap available, including material strike-bound within the plants, scrap on cars and unloaded at holding points, and scrap held for mill accounts at designated dealers yards. A stop order on shipments to holding points issued last week provided additional backlog material. New shipments were scheduled to be moving into mills in quantity by yesterday, with movement and unloading of material from holding points throughout the week.

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PHILADELPHIA—Mills had not authorized any scrap shipments by Friday despite low inventories and the approaching end of the steel strike. By Monday these were coming in, however. At least one yard in this area has an appreciable inventory and has been shipping throughout the strike. Bethlehem inventories at Sparrows Point and Easton, Pa., are sufficient to have permitted a stoppage on shipments.

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DETROIT—The ending of the steel strike in the big mills has made little difference in the situations of dealers and brokers here, except that shipments are now being made directly to mills rather than stockpile points. Demand continues much in excess of supply, although the volume of rejections is currently showing increase, apparently as an outgrowth of desire not to pay demurrage on receipts which ultimately will not be found wholly usable.

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BOSTON—Settlement of the United States Steel Corp. strike notwithstanding, turnings and steel outlets continue to be Weirton, Glassport, Butler and Baltimore, and cast and low phos outlets, New England foundries. However, yards and brokers say shipments are curtailed by lack of scrap and gondola cars. On the other hand, a New England mill, clogged with demurrage cars, has stopped buying.

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NEW YORK—Scrap movement in this area is still very slow, but dealers anticipate an increase in receipt of scrap materials now that scrap-producing mills are gradually resuming operations. Dealers report receipt of instructions to ship to consuming mills direct rather than to storage yards, which has been the general practice the past few weeks. Prices continue firm at ceiling.

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BUFFALO—The complexion of the local market underwent a rapid change this week as the leading openhearth consumers began the job of getting back to normal. Dealers who prepared and held scrap for struck mills expect to make quick deliveries and book new orders. Until news of the strike settlements, trade sentiment had been going downhill. Although none of the big yards was forced to lay off help, one reported less than two weeks' stock of unprepared material in hand.

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ST. LOUIS—Some steel mills in the St. Louis area who had asked that shipments be withheld are now taking the material, while several are still holding back. The movement of material has been slowed down because of a feeling in some quarters that with the increase granted the steel mills, the price of scrap also would be upped, plus the shutdown of some plants because of a short supply of steel due to the strike. Available prices are unchanged.

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CINCINNATI—Tension in the iron and steel market tends to increase, since scrap offerings appear to be less and purchasers are taking virtually all items available. While some furnaces in the area have cooled and there is a modest hold-up on shipments, other interests taking material more than offset these hold-ups. Foundries are also urgently requesting all scrap that it is possible for them to get.

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CLEVELAND—Settlement of the steel strike found most mills here out of the scrap maelstrom but faced with an unloading problem. As examples, one major consumer here has 244 cars on track, and another has 3500 tons put down in a dealer's yard. By and large, the situation is now as "hurry up" as some of the trade had anticipated, but mills are buying openhearth but not low phos as yet.

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BIRMINGHAM—The scrap market in this district is showing increased activity with resumption of steel production. Mill inventories are fairly substantial but not heavy. In the scrap picture here generally, demand is particularly strong for blast furnace and cast grades but supplies are limited.

Going prices as obtained in the trade by IRON AGE editors, based on representative tonnages. Where asterisks are used on quotations below, this indicates a ceiling price to which must be added brokerage fee and adjusted freight.

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$20.00*
RR. hvy melting	21.00*
No. 2 hvy. melting	20.00*
RR. scrap rails	21.50*
Rails 3 ft. and under	23.50*
No. 1 comp'd sheets	20.00*
Hand bdld. new shts.	20.00*
Hvy. axle turn.	19.50*
Hvy. steel forge turn.	19.50*
Mach. shop turn.	15.00*
Short shov. turn.	17.00*
Mixed bor. and turn.	15.00*
Cast iron borings	16.00*
Hvy. break cast.	16.50*
No. 1 cupola	20.00*
RR. knuck. and coup.	24.50*
RR. coil springs	24.50*
Rail leaf springs	24.50*
Rolled steel wheels	24.50*
Low phos. bil. crops	25.00*
Low phos.	22.50*
RR. malleable	22.00*

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$18.75*
No. 2 hvy. melting	18.75*
No. 1 bundles	18.75*
No. 2 dealers' bndls.	18.75*
Bundled mach. shop turn.	18.75*
Galv. bundles	16.75*
Mach. shop turn.	13.75*
Short shovels. turn.	15.75*
Cast iron borings	14.75*
Mix. borings & turn.	13.75*
Low phos. hvy forge	23.75*
Low phos. plates	21.25*
No. 1 RR. hvy. melt.	19.75*
Reroll rails	22.25*
Miscellaneous rails	20.25*
Angles & splice bars	22.25*
Locomotive tires, cut	24.25*
Cut holsters & side frames	22.25*
Standard stl. car axles	25.75*
No. 3 steel wheels	23.25*
Couplers & knuckles	23.25*
Agricul. malleable	22.00*
RR. malleable	22.00*
No. 1 mach. cast.	20.00*
Rails 3 ft. and under	22.25*
No. 1 agricul. cast.	20.00*
Hvy. breakable cast.	16.50*
RR. grate bars	15.25*
Cast iron brake shoes	15.25*
Stove plate	19.00*
Clean auto cast.	20.00*
Cast iron carwheels	20.00*

CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.50*
No. 2 hvy. melting	19.50*
No. 1 bundles	19.50*
No. 2 bundles	19.50*
Mach. shop turn.	$10.50 to 11.00
Shoveling turn.	12.50 to 13.00
Cast iron borings	11.50 to 12.00
Mixed bor. & turn.	11.50 to 12.00
Low phos. plate	22.00*
No. 1 cupola cast.	20.00*
Hvy. breakable cast.	16.50*
RR. grate bars	15.25*
Cast iron brake shoes	15.25*
Stove plate	19.00*
Scrap rails	21.00*

BOSTON

Dealers' buying prices per gross ton, f.o.b. cars

No. 1 hvy. melting	$15.05*
No. 2 hvy. melting	15.05*
No. 1 and 2 bundles	15.05*
Busheling	15.05*
Turnings, shovelings	12.05*
Machine shop turn.	10.05*
Mixed bor. & turn.	10.05*
Cl'n cast, chem. bor.	$13.06 to 14.15*

Truck delivery to foundry

Machinery cast.	21.00 to 23.51*
Breakable cast	21.57 to 21.87*
Stove plate	20.00 to 23.51*

DETROIT

Per gross ton, brokers' buying prices:

No. 1 hvy. melting	$17.32*
No. 2 hvy. melting	17.32*
No. 1 bundles	17.32*
New busheling	17.32*
Flashings	17.32*
Mach. shop turn.	13.32*
Short shov. turn.	14.32*
Cast iron borings	13.32*
Mixed bor. & turn.	12.32*
Low phos. plate	19.82*
No. 1 cupola cast	20.00*
Charging box cast	19.00*
Hvy. breakable cast	16.50*
Stove plate	19.00*
Automotive cast	20.00*

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$18.75*
No. 2 hvy. melting	18.75*
No. 2 bundles	18.75*
Mach. shop turn.	13.75*
Shoveling turn.	15.75*
Cast iron borings	14.75*
Mixed bor. & turn.	13.75*
No. 1 cupola cast	20.00*
Hvy. breakable cast	16.50*
Cast. charging box	19.00*
Hvy. axle forge turn.	18.25*
Low phos. plate	21.25*
Low phos. punchings	21.25*
Billet crops	21.25*
RR. steel wheels	23.25*
RR. coil springs	23.25*
RR. malleable	22.00*

ST. LOUIS

Per gross ton delivered to consumer:

Heavy melting	$17.50*
Bundled sheets	17.50*
Mach. shop turn.	12.50*
Locomotive tires, uncut	$18.50 to 19.00
Misc. std. sec. rails	19.00*
Rerolling rails	21.00*
Steel angle bars	21.00*
Rails 3 ft. and under	21.50*
RR. springs	22.00*
Steel car axles	24.50*
Stove plate	19.00*
Grate bars	15.25*
Brake shoes	15.25*
RR. malleable	22.00*
Cast iron carwheels	20.00*
No. 1 mach'ery cast	20.00*
Breakable cast	16.50*

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$17.00*
No. 2 hvy. melting	17.00*
No. 2 bundles	17.00*
No. 1 busheling	17.00*
Long turnings	12.00*
Shoveling turnings	14.00*
Cast iron borings	13.00*
Bar crops and plate	$18.50 to 19.50*
Structural and plate	18.50 to 19.50*
No. 1 cast	20.00*
Stove plate	19.00*
Steel axles	18.50*
Scrap rails	18.50
Rerolling rails	20.50*
Angles & splice bars	20.50 to 21.00
Rails 3 ft. & under	21.00*
Cast iron carwheels	17.50 to 18.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$20.00*
No. 2 hvy melting	20.00*
Low phos. plate	22.50*
No. 1 busheling	20.00*
Hydraulic bundles	20.00*
Mach. shop turn.	15.00*
Short shovel. turn.	17.00*
Cast iron borings	16.00*

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$15.33*
No. 2 hvy. melting	15.33*
Comp. black bundles	15.33*
Comp. galv. bundles	13.33*
Mach. shop turn.	10.33*
Mixed bor. & turn.	10.33*
Shoveling turn.	12.33*
No. 1 cupola cast	20.00*
Hvy. breakable cast	16.50*
Charging box cast	19.00*
Store plate	19.00*
Clean auto cast	20.00*
Unstrip. motor blks.	17.50*
Cl'n chem. cast bor.	14.33*

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.25*
No. 1 bundles	19.25*
No. 2 bundles	19.25*
No. 2 hvy. melting	19.25*
Mach. shop turn.	14.25*
Shoveling turn.	16.25*
Cast iron borings	14.25*
Cast iron borings	15.25*
Mixed bor. & turn.	14.25*
Stove plate	19.00*
Low phos. plate	21.75*
Scrap rails	20.75*
Rails 3 ft. & under	22.75*
RR. steel wheels	23.75*
Cast iron car wheels	20.00*
RR. coil & leaf spgs.	23.75*
RR. knuckles & coup.	23.75*
RR. malleable	22.00*
No. 1 busheling	19.25*

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.50*
No. 2 hvy. melting	19.50*
Compressed sheet stl.	19.50*
Drop forge flashings	19.00
No. 2 bundles	19.50*
Mach. shop turn.	14.50*
Short shovel.	16.50*
No. 1 busheling	19.50*
Steel axle turn.	19.00*
Low phos. billet and bloom crops	24.50*
Cast iron borings	15.50*
Mixed bor. & turn.	14.50*
No. 2 busheling	17.00*
No. 1 machine cast	29.00*
Railroad cast	20.00*
Railroad grate bars	15.25*
Stove plate	19.00*
RR. hvy. melting	20.50*
Rails 3 ft. & under	23.00*
Rails 18 in. & under	24.25*
Rails for rerolling	23.00*
Railroad malleable	22.00*
Elec. furnace punch	22.00*

SAN FRANCISCO

Per gross ton delivered to consumer:

RR. hvy. melting	$15.00 to 15.75
No. 1 hvy. melting	15.00 to 15.75
No. 2 hvy. melting	14.00 to 14.75
No. 2 bales	12.50 to 13.25
No. 3 bales	8.50 to 9.25
Mach. shop turn.	7.00
Elec. furn. 1 ft. und.	15.50 to 17.00
No. 1 cupola cast	19.00 to 21.00

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	$13.00 to $14.25
No. 2 hvy. melting	12.00 to 13.25
No. 1 bales	12.00 to 13.00
No. 2 bales	11.00 to 12.00
No. 3 bales	8.00 to 9.00
Mach. shop turn.	4.50
No. 1 cupola cast	19.00 to 21.00

SEATTLE

Per gross ton delivered to consumer:

RR. hvy. melting	$10.00
No. 1 & No. 2 hvy. melting	10.00
Elec. furn. 1 ft. und.	$14.00 to 15.00
No. 1 cupola cast	20.00*

HAMILTON, ONT.

Per gross ton delivered to consumer:

Heavy melting	$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scrap	15.50*
Rails, remelting	18.50*
Rails, rerolling	21.50*
Bushelings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast	19.00*
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*

Comparison of Prices . .

[Advances over past week in **Heavy Type**; declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.]

Flat-Rolled Steel: (cents per pound)	Feb. 19, 1946	Feb. 12, 1946	Jan. 15, 1946	Feb. 20, 1945
Hot-rolled sheets	2.20	2.20	2.20	2.10
Cold-rolled sheets	3.05	3.05	3.05	3.05
Galvanized sheets (24 ga.)	3.70	3.70	3.70	3.50
Hot-rolled strip	2.10	2.10	2.10	2.10
Cold-rolled strip	2.80	2.80	2.80	2.80
Plates	2.25	2.25	2.25	2.10
Plates, wrought iron	3.80	3.80	3.80	3.80
Stain's c-r strip (No. 302)	28.00	28.00	28.00	28.00
Tin and Terneplate: (dollars per base box)				
Tinplate, standard cokes.	$5.00	$5.00	$5.00	$5.00
Tinplate, electrolytic	4.50	4.50	4.50	4.50
Special coated mfg. ternes	4.30	4.30	4.30	4.30
Bars and Shapes: (cents per pound)				
Merchant bars	2.25	2.25	2.25	2.15
Cold-finished bars	2.75	2.75	2.75	2.65
Alloy bars	2.70	2.70	2.70	2.70
Structural shapes	2.10	2.10	2.10	2.10
Stainless bars (No. 302)	24.00	24.00	24.00	24.00
Wrought iron bars	4.40	4.40	4.40	4.40
Wire and Wire Products: (cents per pound)				
Bright wire	2.75	2.75	2.75	2.60
Wire nails	2.90	2.90	2.90	2.55
Rails: (dollars per gross ton)				
Heavy rails	$43.00	$43.00	$43.00	$40.00
Light rails	45.00	45.00	45.00	40.00
Semifinished Steel: (dollars per gross ton)				
Rerolling billets	$36.00	$36.00	$36.00	$34.00
Sheet bars	36.00	36.00	36.00	34.00
Slabs, rerolling	36.00	36.00	36.00	34.00
Forging billets	42.00	42.00	42.00	40.00
Alloy blooms, billets, slabs	54.00	54.00	54.00	54.00
Wire Rods and Skelp: (cents per pound)				
Wire rods	2.15	2.15	2.15	2.00
Skelp	1.90	1.90	1.90	1.90

Pig Iron: (per gross ton)	Feb. 19, 1946	Feb. 12, 1946	Jan. 15, 1946	Feb. 20, 1945
No. 2 foundry, Phila.	$27.59	$27.59	$27.59	$26.84
No. 2, Valley furnace	25.75	25.75	25.75	25.00
No. 2, Southern, Cin'ti	26.19	26.19	26.19	25.44
No. 2, Birmingham	22.13	22.13	22.13	21.38
No. 2 foundry, Chicago†	25.75	25.75	25.75	25.00
Basic, del'd eastern Pa.	27.09	27.09	27.09	26.34
Basic, Valley furnace	25.25	25.25	25.25	24.50
Malleable, Chicago†	25.75	25.75	25.75	25.00
Malleable, Valley	25.75	25.75	25.75	25.00
L. S. charcoal, Chicago	42.34	42.34	42.34	37.34
Ferromanganese‡	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is 60¢ per ton.
‡ For carlots at seaboard.

Scrap: (per gross ton)				
Heavy melt'g steel, P'gh.	$20.00	$20.00	$20.00	$20.00
Heavy melt'g steel, Phila.	18.75	18.75	18.75	18.75
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.32	17.32	17.32	17.32
Low phos. plate, Youngs'n	22.50	22.50	22.50	22.50
No. 1 cast, Pittsburgh	20.00	20.00	20.00	20.00
No. 1 cast, Philadelphia	20.00	20.00	20.00	20.00
No. 1 cast, Chicago	20.00	20.00	20.00	20.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$7.50	$7.50	$7.50	$7.00
Foundry coke, prompt	9.00	9.00	9.00	8.25
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro., Conn.	12.00	12.00	12.00	12.00
Copper, Lake	12.00	12.00	12.00	12.00
Tin, Straits, New York	52.00	52.00	52.00	52.00
Zinc, East St. Louis	8.25	8.25	8.25	8.25
Lead, St. Louis	6.35	6.35	6.35	6.35
Aluminum, virgin, del'd.	15.00	15.00	15.00	15.00
Nickel, electrolytic	35.00	35.00	35.00	35.00
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	14.50	14.50	14.50	14.50

Composite Prices . .

[Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942 and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite prices for the current quarter are an estimate based on finished steel shipments for the previous quarter. These figures will be revised when the actual data of shipments for this quarter are compiled.]

	FINISHED STEEL	PIG IRON	SCRAP STEEL
Feb. 19, 1946	2.44104¢ per lb.	$25.37 per gross ton	$19.17 per gross ton
One week ago	2.44104¢ per lb.	$25.37 per gross ton	$19.17 per gross ton
One month ago	2.44104¢ per lb.	$25.37 per gross ton	$19.17 per gross ton
One year ago	2.38444¢ per lb.	$24.61 per gross ton	$19.17 per gross ton

	FINISHED STEEL HIGH	FINISHED STEEL LOW	PIG IRON HIGH	PIG IRON LOW	SCRAP STEEL HIGH	SCRAP STEEL LOW
1945	2.44104¢ Oct. 2	2.38444¢ Jan. 2	$25.37 Oct. 23	$23.61 Jan. 2	$19.17	$19.17
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17	$15.67 Oct. 24
1943	2.29176¢	2.29176¢	23.61	23.61	19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 8
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 9
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec. 9
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 3

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 pct of the United States output. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

NOW!

"STAINLESS" MACHINING RATES AT YOUR FINGERTIPS

Here's another Frasse help for stainless steel users: a table of recommended machining rates for 18 stainless types... for 10 separate operations... with specific tooling data — all condensed in one easy-to-use, quick reference chart!

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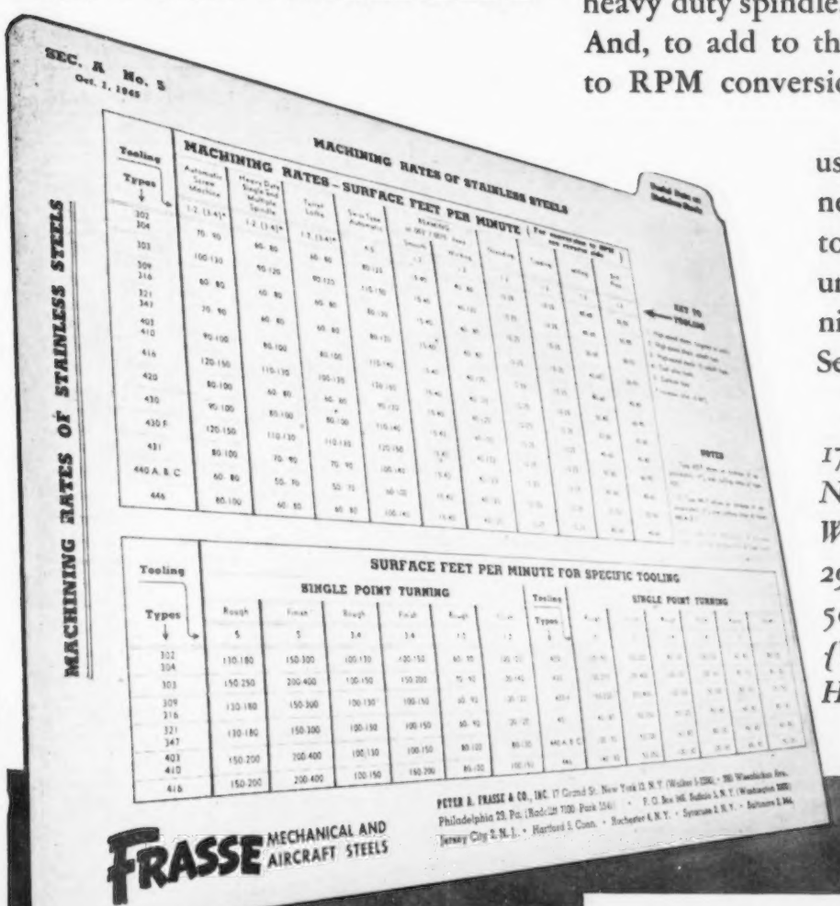

SEC. A No. 5
Oct. 1, 1945

MACHINING RATES OF STAINLESS STEELS

MACHINING RATES OF STAINLESS STEELS

MACHINING RATES – SURFACE FEET PER MINUTE

SURFACE FEET PER MINUTE FOR SPECIFIC TOOLING

SINGLE POINT TURNING

FRASSE MECHANICAL AND AIRCRAFT STEELS

PETER A. FRASSE & CO., INC. 17 Grand St., New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Radcliff 7100 Park 5541) • P. O. Box 168, Buffalo 3, N. Y. (Washington 2000) Jersey City 2, N. J. • Hartford 5, Conn. • Rochester 4, N. Y. • Syracuse 2, N. Y. • Baltimore 2, Md.

FRASSE
MECHANICAL AND AIRCRAFT STEELS

Alloy, Stainless, and Cold Finished Carbon Steels
Bars, Sheets, Tube, Strip and Wire

Peter A. Frasse & Co., Inc. *11-1*
17 Grand Street, New York 13, N. Y.

Please send me, without obligation, a copy of your new data chart Sec. A, No. 5—'Machining Rates of Stainless Steels'

Name .....

Firm .....

Address .....

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. basing points, in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. (1) Mill run sheet, 10¢ per 100 lb under base; primes, 25¢ above base. (2) Unassorted commercial coating. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only, from producer to consumer. Discount of 25¢ per 100 lb to fabricators. (8) Also shafting. For quantities of 20,000 lb. to 39,999 lb. (9) Carload lot in manufacturing trade. (10) Prices do not apply if rail and water is not used. (11) Boxed. (12) This base price for annealed, bright finish wires, commercial spring wire. (13) Produced to dimensional tolerances in AISI Manual Sect. 6. (14) Billets only. (15) 9/32 in. to 47/64 in., 0.15c. per lb higher.

Basing Points	Pitts-burgh	Chicago	Gary	Cleve-land	Birm-ingham	Buffalo	Youngs-town	Spar-rows Point	Granite City	Middle-town, Ohio	Gulf Ports, Cars	Pacific Ports, Cars[10]	DELIVERED TO Detroit	New York	Phila-delphia
INGOTS															
Carbon, rerolling	($31.00 f.o.b. mill)														
Carbon, forging	$36	$36	$36	$36	$36	$36	$36								
Alloy	$45	$45				$45	(Bethlehem, Massillon, Canton, Coatesville—$45)								
BILLETS, BLOOMS, SLABS															
Carbon, rerolling	$36	$36	$36	$36	$36	$36	$36	$36	(Provo—$47.20, Duluth—$38[14])			$48[14]	$38		
Carbon, forging	$42	$42	$42	$42	$42	$42	$42		(Provo—$53.20, Duluth—$44[14])			$54[14]	$44		
Alloy	$54	$54				$54	(Bethlehem, Massillon, Canton—$54)						$56		
SHEET BARS	$36	$36		$36		$36	$36	$36	(Canton—$36)						
PIPE SKELP	1.90¢	1.90¢					1.90¢	1.90¢	(Coatesville—1.90¢)						
WIRE RODS[15]															
No. 5 to 9/32 in.	2.15¢	2.15¢		2.15¢	2.15¢	(Worcester—2.25¢)					2.40¢	2.65¢			
SHEETS															
Hot-rolled	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.30¢	2.20¢		2.75¢	2.30¢	2.44¢	2.37¢
Cold-rolled[1]	3.05¢	3.05¢	3.05¢	3.05¢		3.05¢	3.05¢		3.15¢	3.05¢		3.70¢	3.15¢	3.39¢	3.37¢
Galvanized (24 gage)	3.70¢	3.70¢	3.70¢		3.70¢	3.70¢	3.70¢	3.70¢	3.80¢	3.70¢		4.25¢		3.94¢	3.87¢
Enameling (20 gage)	3.45¢	3.45¢	3.45¢	3.45¢			3.45¢		3.55¢	3.45¢		4.10¢	3.55¢	3.81¢	3.77¢
Long ternes[2]	3.80¢	3.80¢	3.80¢									4.55¢		4.16¢	4.12¢
STRIP															
Hot-rolled[3]	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢			2.10¢		2.75¢	2.20¢	2.46¢	
Cold-rolled[4]	2.80¢	2.90¢		2.80¢			2.80¢	(Worcester—3.00¢)					2.90¢	3.16¢	
Cooperage stock	2.20¢	2.20¢			2.20¢		2.20¢							2.56¢	
Commodity cold-rolled	2.95¢	3.05¢		2.95¢			2.95¢	(Worcester—3.35¢)					3.05¢	3.31¢	
TINPLATE															
Standard cokes, base box	$5.00	$5.00	$5.00		$5.10			$5.10	$5.10					$5.35[13]	$5.28[11]
Electro, box 0.25 lb	$4.35	$4.35	$4.35					$4.45							
Electro, box 0.50 lb	$4.50	$4.50	$4.50					$4.60	$4.60						
Electro, box 0.75 lb	$4.65		$4.65					$4.75	$4.75						
BLACKPLATE															
29 gage[5]	3.05¢	3.05¢	3.05¢					3.15¢	3.15¢			4.05¢[11]			3.32¢
TERNES, MFG.															
Special coated, base box	$4.30	$4.30	$4.30					$4.40	$4.40						
BARS															
Carbon steel	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢	2.25	(Duluth—2.35¢, Provo, Utah 2.95¢)			2.60¢	2.90¢	2.35¢	2.59¢	2.57¢
Rail steel[6]	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢					2.60¢	2.90¢			
Reinforcing (billet)[7]	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			2.50¢	2.55¢	2.25¢	2.39¢	
Reinforcing (rail)[7]	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢				2.50¢	2.55¢	2.25¢		2.47¢
Cold-finished[8]	2.75¢	2.75¢	2.75¢	2.75¢		2.75¢			(Detroit—2.80¢)		(Toledo—2.90¢)			3.09¢	3.07¢
Alloy, hot-rolled	2.70¢	2.70¢				2.70¢	2.70	(Bethlehem, Massillon, Canton—2.70¢)					2.80¢		
Alloy, cold-drawn	3.35¢	3.35¢	3.35¢	3.35¢		3.35¢							3.45¢		
PLATES								(Coatesville and Claymont—2.25¢, Provo, Utah 2.95¢)							
Carbon steel[13]	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢		2.25¢	2.25¢			2.60¢	2.80¢	2.47¢	2.44¢	2.30¢
Floor plates	3.50¢	3.50¢									3.85¢	4.15¢		3.86¢	3.82¢
Alloy	3.50¢	3.50¢			(Coatesville—3.50¢)						3.95¢	4.15¢		3.70¢	3.59¢
SHAPES															
Structural	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢	(Bethlehem—2.10¢)				2.45¢	2.75¢		2.27¢	2.215¢
SPRING STEEL, C-R															
0.26 to 0.50 carbon	2.80¢			2.80¢			(Worcester—3.00¢)								
0.51 to 0.75 carbon	4.30¢			4.30¢			(Worcester—4.50¢)								
0.76 to 1.00 carbon	6.15¢			6.15¢			(Worcester—6.35¢)								
1.01 to 1.25 carbon	8.35¢			8.35¢			(Worcester—8.55¢)								
WIRE[9]															
Bright[12]	2.75¢	2.75¢		2.75¢	2.75¢		(Worcester—2.85¢)			(Duluth—2.80¢)		3.25¢			3.07¢
Galvanized	Add proper size extra and galvanizing extra to Bright Wire base														
Spring (high carbon)	3.35¢	3.35¢		3.35¢			(Worcester—3.45¢)					3.85¢			3.67¢
PILING															
Steel sheet	2.40¢	2.40¢				2.40¢						2.95¢			2.72¢

CORROSION AND HEAT RESISTANT STEELS

in cents per pound, f.o.b. basing point

BASING POINT	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila.	Subject to negotiation			Subject to negotiation		
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt	21.25	20.40	15.725	16.15	19.125	23.375
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	21.25	20.40	15.725	16.15	19.125	23.375
Billets, P'gh, Chi, Canton, Newark, N. J., Watervliet, Syracuse, Balt	Subject to negotiation			Subject to negotiation		
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Watervliet, Syracuse, Newark, N. J., Ft. Wayne, Titusville	21.25	20.40	15.725	16.15	19.125	23.375
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville	25.00	24.00	18.50	19.00	22.50	27.50
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet	25.00	24.00	18.50	19.00	22.50	27.50
Plates, P'gh, Middletown, Canton	29.00	27.00	21.50	22.00	26.50	30.50
Shapes, structural, P'gh, Chi	25.00	24.00	18.50	19.00	22.50	27.50
Sheets, P'gh, Chi, Middletown, Canton, Balt	36.00	34.00	26.50	29.00	32.50	36.50
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	23.50	21.50	17.00	17.50	24.00	35.00
Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown	30.00	28.00	22.00	22.50	32.00	52.00
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila	25.00	24.00	18.50	19.00	22.50	27.50
Wire flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton	30.00	28.00	22.00	22.50	32.00	52.00
Rod, h-r, Newark, N. J., Syracuse	25.00	24.00	18.50	19.00	22.50	27.50
Tubing, seamless, P'gh, Chi, Canton, (4 in. to 6 in.)	66.63	66.63	.....	63.30	.....	.....

SHELL STEEL

	per gross ton
3 in. to 12 in.	$52.00
12 in. to 18 in.	54.00
18 in. and over	56.00

Basic openhearth shell steel, f.o.b. Pittsburgh, Chicago, Buffalo, Gary, Cleveland, Youngstown and Birmingham.

Prices delivered Detroit are $2.00 higher; East Michigan, $3 higher.

Price Exceptions: Follansbee Steel Corp. permitted to sell at $13.00 per gross ton, f.o.b. Toronto, Ohio, above base price of $52.00.

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting, or quantity.

ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	per lb
Field grade	3.30¢
Armature	3.65¢
Electrical	4.15¢
Motor	5.05¢
Dynamo	5.75¢
Transformer 72	6.25¢
Transformer 65	7.25¢
Transformer 58	7.75¢
Transformer 52	8.55¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo. Pacific ports add 75¢ per 100 lb on all grades.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb
No. 1 O.H., gross ton $43.00
Angle splice bars, 100 lb 2.70

(F.o.b. basing points)	*per gross ton*
Light rails (from billets)	$45.00
Light rails (from rail steel)	44.00
	base per lb
Cut spikes	3.25¢
Screw spikes	5.40¢
Tie plate, steel	2.30¢
Tie plates, Pacific Coast	2.45¢
Track bolts	4.75¢
Track bolts, heat treated, to railroads	5.00¢
Track bolts, jobbers discount	63-5

Basing points, light rails, Pittsburgh, Chicago, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, Oregon and Washington ports, add 25¢.

TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk)

(*Also Canton, O.)	*base per lb*
High speed	67¢
Straight molybdenum	54¢
Tungsten-molybdenum	57½¢
High-carbon-chromium*	43¢
Oil hardening*	24¢
Special carbon*	22¢
Extra carbon*	18¢
Regular carbon*	14¢

Warehouse prices east of Mississippi are 2¢ per lb higher; west of Mississippi 3¢ higher.

CLAD STEEL

Base prices, cents per pound

	Plate	*Sheet*
Stainless-clad No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Pa.	18.00*	19.00
Nickel-clad 10 pct, f.o.b. Coatesville, Pa.	18.00	....
Inconel-clad 10 pct, f.o.b. Coatesville	25.00	....
Monel-clad 10 pct, f.o.b. Coatesville	24.00	....
Aluminized steel Hot dip, 20 gage, f.o.b. Pittsburgh	....	9.00

*Includes annealing and pickling.

WIRE PRODUCTS

To the trade, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Basing Points Named	*Pacific Coast Basing Points†*
	base per keg	
Standard wire nails	$2.90	$3.40
Coated nails	2.90	3.40
Cut nails, carloads	3.85	....
	base per 100 lb	
Annealed fence wire	$3.20	$3.70
Annealed galv. fence wire	3.55	4.05
	base column	
Woven wire fence*	67	85
Fence posts, carloads	69	86
Single loop bale ties	66	91
Galvanized barbed wire**	72	82
Twisted barbless wire	72	....

*15½ gage and heavier. **On 80-rod spools in carload quantities.

†Prices subject to switching or transportation charges.

ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb coating I.C.	$6.00	$12.00
15-lb coating I.C.	7.00	14.00
20-lb coating I.C.	7.50	15.00

ALLOY EXTRAS

Alloy Steel	Basic Openhearth		Electric Furnace	
	Bars and Bar-strip	Billets, Blooms and Slabs	Bars and Bar-strip	Billets, Blooms, and Slabs
NE 8600	0.65¢	$13.00	$1.15	$23.00
NE 8700	0.70	14.00	1.20	24.00
NE 9400	0.75	15.00	1.25	25.00
NE 9700	0.65	13.00	1.15	23.00
NE 9800	1.30	26.00	1.80	36.00
NE 9900	1.20	24.00	1.55	31.00

The extras shown are in addition to the base price of $2.70 per 100 lb on finished products and $54 per gross ton on semifinished steel, major basing points, as shown in table, opposite page, and are in cents per pound when applicable to bars and bar-strip and in dollars per gross ton when applicable to billets, blooms and slabs. When acid openhearth is specified and acceptable, add to basic openhearth alloy differential 0.25¢ per lb for bars and bar-strip and $5 per gross ton for billets, blooms and slabs.

WELDED PIPE AND TUBING

Base discounts, f.o.b. Pittsburgh district and Lorain, Ohio, mills

(F.o.b. Pittsburgh only on wrought pipe) base price—$200.00 per net ton

Steel (buttweld)

	Black	Galv.
⅛-in.	63½	51
¼-in	66½	55
1-in. to 3-in.	68½	57½

Wrought Iron (buttweld)

⅛-in.	24	3½
¼-in.	30	10
1-in. and 1¼-in.	34	16
1½-in.	38	18½
2-in.	37½	18

Steel (lapweld)

2-in.	61	49½
2½-in. and 3-in.	64	52½
3½-in. to 6-in.	66	54½

Wrought Iron (lapweld)

2-in.	30½	12
2½-in. to 3½-in.	31½	14½
4-in.	33½	18
4½- in. to 8-in.	32½	17

Steel (butt, extra strong, plain ends)

⅛-in.	61½	50½
¼-in.	65½	54½
1-in. to 3-in.	67	57

Wrought Iron (same as above)

⅛-in.	25	6
¼-in.	31	12
1-in. to 2-in.	38	19½

Steel (lap, extra strong, plain ends)

2-in.	59	48½
2½-in. and 3-in.	63	52½
3½-in. to 6-in.	66½	56

Wrought Iron (same as above)

2-in.	33½	15½
2½-in. to 4-in.	39	22½
4½-in. to 6-in.	37½	21

On buttweld and lapweld steel pipe jobbers are granted a discount of 5 pct. On l.c.l. shipments prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or $4 a ton higher than Pittsburgh or Lorain on lapweld and one point lower discount, or $2 a ton higher on all buttweld.

BOILER TUBES

Seamless steel and lapweld commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft f.o.b. Pittsburgh, in carload lots

	Seamless Cold-Drawn	Seamless Hot-Rolled	Lapweld, Hot-Rolled
2 in. O.D. 13 B.W.G.	15.03	13.04	12.38
2½ in. O.D. 12 B.W.G.	20.21	17.54	16.58
3 in. O.D. 12 B.W.G.	22.48	19.50	18.35
3½ in. O.D. 11 B.W.G.	28.37	24.62	23.15
4 in. O.D. 10 B.W.G.	35.20	30.54	28.66

(Extras for less carload quantities)

40,000 lb or ft and over.....Base
30,000 lb or ft to 39,999 lb or ft.... 5 pct
20,000 lb or ft to 29,999 lb or ft....10 pct
10,000 lb or ft to 19,999 lb or ft....20 pct
5,000 lb or ft to 9,999 lb or ft....30 pct
2,000 lb or ft or 4,999 lb or ft....45 pct
Under 2,000 lb or ft.....65 pct

CAST IRON WATER PIPE

Per Net Ton

6-in. and larger, del'd Chicago.....$54.80
6-in. and larger, del'd New York... 52.20
6-in. and larger, Birmingham..... 46.00
6-in. and larger, f.o.b. cars, San Francisco or Los Angeles..... 69.40
6-in. and larger f.o.b. cars, Seattle. 71.20

Class "A" and gas pipe, $3 extra; 4-in. pipe is $3 a ton above 6-in. Prices shown are for lots of less than 200 tons. For 200 tons or over, 6-in. and larger are $45 at Birmingham and $53.80 delivered Chicago, $59.40 at San Francisco and Los Angeles, and $70.20 at Seattle. Delivered prices do not reflect 3 pct tax on freight rates.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

Base discount less case lots

Percent Off List

½ in. & smaller x 6 in. & shorter....65½
9/16 & ⅝ in. x 6 in. & shorter.....63½
¾ to 1 in. x 6 in. & shorter.....61
1⅛ in. and larger, all lengths.....59
All diameters over 6 in. long.....59
Lag, all sizes.....62
Plow bolts.....65

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller.....62
9/16 to 1 in. inclusive.....59
1⅛ to 1½ in. inclusive.....57
1⅝ in. and larger.....56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts	U.S.S.	S.A.E.
Base discount less keg lots		
7/16 in. and smaller	..	64
½ in. and smaller	62	..
½ in. through 1 in.	..	60
9/16 in. through 1 in.	59	..
1⅛ in. through 1½ in.	57	58
1⅝ in. and larger	56	..

In full keg lots, 10 pct additional discount.

Stove Bolts

Consumer

Packages, nuts loose.....71 and 10
In packages.....71
In bulk.....80

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.

Large Rivets

(½ in. and larger)

Base per 100 Lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham.....$3.75

Small Rivets

(7/16 in. and smaller)

Percent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham.....65 and 5

Cap and Set Screws	*Consumer Percent Off List*
Upset full fin, hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in.	64
Upset set screws, cup and oval points	71
Milled studs	46
Flat head cap screws, listed sizes	36
Fillister head cap, listed sizes	51

Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.

FLUORSPAR

Maximum price f.o.b. consumer's plant, $30 per short ton plus either (1) rail freight from producer to consumer, or (2) rail freight from Rosiclare, Ill., to consumer, whichever is lower.

Exception

When the WPB Steel Div. certifies in writing the consumers need for one of the higher grades of metallurgical fluorspar specified in the table below the price shall be taken from the table plus items (1 and 2) from paragraph above.

Effective CaF_2 Content:	*Base price per short ton*
70% or more	$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00

METAL POWDERS

Prices are based on current market prices of ingots plus a fixed figure. F.o.b. shipping point, cents per lb, ton lots.

Copper, electrolytic, 150 and 200 mesh.....21½¢ to 23½¢
Copper, reduced, 150 and 200 mesh.....20½¢ to 25½¢
Iron, commercial, 100 and 200 mesh 96 + % Fe.....12½¢ to 15¢
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots..... 4¢
Iron, hydrogen reduced, 300 mesh and finer, 98½ + % Fe, drum lots..... 63¢
Iron, electrolytic, unannealed, 300 mesh and coarser, 99 + % Fe 30 to 33¢
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe..... 42¢
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe..... 90¢
Aluminum, 100 and 200 mesh..... *25¢
Antimony, 100 mesh..... 30¢
Cadmium, 100 mesh..... $1.40
Chromium, 100 mesh and finer.... $1.25
Lead, 100, 200 & 300 mesh....11½ to 15¢
Manganese..... 65¢
Nickel, 150 mesh..... 51½¢
Solder powder, 100 mesh..8½¢ plus metal
Tin, 100 mesh..... 58¾¢
Tungsten metal powder, 98%-99%, any quantity, per lb..... $2.60
Molybdenum powder, 99%, in 200-lb kegs, f.o.b. York, Pa., per lb... $2.60
Under 100 lb..... $3.00

*Freight allowed east of Mississippi.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$7.50*
Foundry, beehive (f.o.b. oven)	
Fayette Co., W. Va.	8.10
Connellsville, Pa.	9.00
Foundry, Byproduct	
Chicago, del'd	13.75
Chicago, f.o.b.	13.00
New England, del'd.	14.65
Kearny, N. J., f.o.b.	13.05
Philadelphia, del'd	13.28
Buffalo, del'd	13.40
Portsmouth, Ohio, f.o.b.	11.50
Painesville, Ohio, f.o.b.	12.15
Erie, del'd	13.15
Cleveland, del'd	13.20
Cincinnati, del'd	13.25
St. Louis, del'd	13.75†
Birmingham, del'd	10.90

*Hand drawn ovens using trucked coal permitted to charge $8.60 per ton plus transportation charges.

†Except producers situated in states other than Missouri, Alabama or Tennessee, sellers may charge a maximum delivered price of $14.25 in the St. Louis, Mo., and East St. Louis, Ill., switching districts.

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick	*Per 1000*
Super-Duty brick, St. Louis	$68.50
First quality, Pa., Md., Ky., Mo., Ill.	54.40
First quality, New Jersey	59.35
Sec. quality, Pa., Md., Ky., Mo., Ill.	49.35
Sec. quality, New Jersey	51.95
No. 1 Ohio	45.60
Ground fire clay, net ton	8.05
Silica Brick	
Pennsylvania and Birmingham	$54.40
Chicago District	62.45
Silica cement, net ton (Eastern)	9.55
Chrome Brick	*Per Net Ton*
Standard chemically bonded, Balt., Plymouth Meeting, Chester	$54.00
Magnesite Brick	
Standard, Balt. and Chester	$76.00
Chemically bonded, Baltimore	65.00
Grain Magnesite	
Domestic, f.o.b. Balt. and Chester in sacks (carloads)	$43.48
Domestic, f.o.b. Chewelah, Wash. in bulk	22.00
in sacks	26.00

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports*)

Per Gross Ton

Old range, bessemer, 51.50..... $4.95
Old range, non-bessemer, 51.50.... 4.80
Mesaba, bessemer, 51.50..... 4.70
Mesaba, non-bessemer, 51.50 ..... 4.55
High phosphorus, 51.50..... 4.35

*Adjustments are made to indicate prices based on variance of Fe content of ores as analyzed on a dry basis by independent laboratories.

WAREHOUSE PRICES

Delivered metropolitan areas per 100 lb. These are zoned warehouse prices in conformance with latest zoning amendment to OPA Price Schedule 49.

Cities	SHEETS			STRIP		Plates ¼ in. and heavier	Structural Shapes	BARS		ALLOY BARS			
	Hot Rolled (10 gage)	Cold Rolled	Galvanized (24 gage)	Hot Rolled	Cold Rolled			Hot Rolled	Cold Finished	Hot Rolled, NE 8617-20	Hot Rolled, NE 9442-45 Ann.	Cold Drawn, NE 8617-20	Cold Drawn, NE 9442-45 Ann.
**Philadelphia	$3.518	$4.872[§]	$4.868[a]	$3.922	$4.772	$3.605	$3.668	$3.822	$4.172	$5.816	$6.866	$7.072	$8.172
New York	3.59	4.613	5.210	3.974[6]	4.772	3.788	3.758	3.853	4.203	5.858	6.908	7.103	8.203
Boston	3.744	4.744[9]	5.324[9]	4.106	4.715	3.912	3.912	4.044	4.244	6.012	7.062	7.194	8.394
Baltimore	3.394	4.852	4.994	3.902	4.752	3.594	3.759	3.802	4.152	....	....	....	....
Norfolk	3.771	4.965	5.471	4.165	4.865	3.971	4.002	4.065	4.265	....	....	....	....
Chicago	3.25	4.20	5.331	3.60	4.65[17]	3.55	3.55	3.50	3.85	5.60	6.65	6.65	7.75
Milwaukee	3.387	4.337	5.372	3.737	4.787[17]	3.687	3.687	3.637	3.987	5.837	6.887	6.887	8.137
Cleveland	3.35	4.40	4.977	3.60	4.45[17]	3.40	3.588	3.35	3.85	5.806	6.856	6.65	7.75
Buffalo	3.35	4.40	4.85	3.819	4.689	3.63	3.40	3.35	3.85	5.60	6.65	6.65	7.75
Detroit	3.45	4.50	5.10	3.70	4.659[17]	3.609	3.661	3.45	3.90	5.93	6.98	6.959	8.059
Cincinnati	3.425	4.475	4.925[5]	3.675	4.711	3.661	3.691	3.611	4.111	5.95	7.00	7.011	8.261
St. Louis	3.397	4.347	5.231	3.747	4.931[17]	3.697	3.697	3.647	4.131	5.981	7.031	7.031	8.131
Pittsburgh	3.35	4.40	4.85	3.60	4.45	3.40	3.40	3.35	3.85	5.60	6.65	6.85	7.75
St. Paul	3.50	4.46	5.357	3.86	5.102[17]	3.81[13]	3.81[13]	3.76[13]	3.461	5.94	5.99	7.361	8.461
Omaha	3.865	5.443	5.615	4.143	....	4.093	4.093	4.043	4.543	....	....	....	....
Indianapolis	3.52	4.568	5.018	3.768	4.741	3.63	3.63	3.58	4.08	5.93	6.98	6.98	8.23
Birmingham	3.45	....	4.85	3.70	....	3.55	3.55	3.50	4.53	....	....	....	....
Memphis	3.965	4.78	5.365	4.215	....	4.065	4.065	4.015	4.33	....	....	....	....
New Orleans	4.058[9]	5.079	5.458	4.308	....	4.158	4.158[9]	4.108[9]	4.729	....	....	....	....
Houston	3.783	5.573	6.413[1]	4.313	....	4.25	4.25	3.75	6.473[3]	7.223	8.323	8.323	9.373
Los Angeles	5.00	7.20	6.20	4.95	5.613[18]	4.95	4.65	4.40	5.683	8.204	9.404	9.304	10.454
San Francisco	4.55[14]	7.30[4]	6.45	4.50[14]	7.333[17]	4.65[14]	4.35[14]	4.15[14]	5.433	8.304	9.404	9.404	10.454
Seattle	4.65[12]	7.05[4]	6.05	4.25[12]	....	4.75[13]	4.45[12]	4.35[12]	5.783	....	9.404	....	....
Portland	4.65[11]	6.60[4]	5.85	4.75[11]	....	4.75[11]	4.45[11]	4.45[11]	5.633	8.304	9.404	8.304	9.404
Salt Lake City	4.530[17]	....	6.27[13]	5.53[17]	....	4.98[17]	4.98[17]	4.88[17]	6.00	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-FINISHED: Sheets, 400 to 1499 lb; strip, extras on all quantities; bars, 1500 lb base.

GALVANIZED: 450 to 1499 lb.

NE ALLOY BARS: 1000 to 39,999 lb.

EXCEPTIONS: (1) 150 to 499 lb. (2) 150 to 1499 lb. (3) 400 to 1499 lb. (4) 450 to 1499 lb. (5) 500 to 1499 lb. (6) 0 to 199 lb. (7) 400 to 1499 lb. (8) 1000 to 1999 lb. (9) 450 to 3749 lb. (10) 400 to 3999 lb. (11) 300 to 4999 lb. (12) 300 to 10,000 lb. (13) 400 to 14,999 lb. (14) 400 lb and over. (15) 1000 lb and over. (16) 1500 lb and over. (17) 2000 lb and over. (18) 3500 lb and over.

(a) Philadelphia: Galvanized sheet, 25 or more bundles.

Extra for size, quality, etc., apply on above quotations.

*Add 0.271¢ for sizes not rolled in Birmingham.

**City of Philadelphia only. Applicable freight rates must be added to basing point prices to obtain delivered price to other localities in metropolitan area.

PIG IRON PRICES

Maximum per gross ton, established by OPA Oct. 22, 1945. Prices do not reflect 3 pct tax on freight.

BASING POINT PRICES					
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	$26.25	$26.75	$27.25	$27.75	.....
Birdsboro	26.25	26.75	27.25	27.75	$31.25
Birmingham	20.75	22.13	....	26.75	.....
Buffalo	24.75	25.75	26.25	26.75	31.25
Chicago	25.25	25.75	25.75	26.25	.....
Cleveland	25.25	25.75	25.75	26.25	.....
Detroit	25.25	25.75	25.75	26.25	.....
Duluth	25.75	26.25	26.25	26.75	.....
Erie	25.25	25.75	26.25	26.75	.....
Everett	26.25	26.75	27.25	27.75	.....
Granite City	25.25	25.75	25.75	26.25	.....
Hamilton	25.25	25.75	25.75	....	.....
Neville Island	25.25	25.75	25.75	26.25	.....
Provo	23.25	23.75	....	....	.....
Sharpsville [1]	25.25	25.75	25.75	26.25	.....
Sparrows Point	26.25	26.75	.....	.....	.....
Steelton	26.25	.....	.....	.....	31.25
Swedeland	26.25	26.75	27.25	27.75	.....
Toledo	25.25	25.75	25.75	26.25	.....
Youngstown	25.25	25.75	25.75	26.25	.....

DELIVERED PRICES (BASE GRADES)						
Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$ .50	$26.75	$27.25	$27.75	$28.25	.....
Boston	Birdsboro-Steelton	4.02	.....	.....	.....	.....	$35.27
Brooklyn	Bethlehem	2.50	28.75	29.25	29.75	30.25	.....
Brooklyn	Birdsboro	2.92	.....	.....	.....	.....	34.17
Canton	Clev, Ygstn, Sharpsvil	1.39	26.64	27.14	27.14	27.64	.....
Canton	Buffalo	3.19	.....	.....	.....	.....	34.44
Cincinnati	Birmingham	4.06	24.81	26.19	.....	.....	.....
Cincinnati	Hamilton	1.11	.....	.....	26.86	.....	.....
Cincinnati	Buffalo	4.40	.....	.....	.....	.....	35.65
Jersey City	Bethlehem	1.53	27.78	28.28	28.78	29.28	.....
Jersey City	Birdsboro	1.94	.....	.....	.....	.....	33.19
Los Angeles	Provo	4.95	28.20	28.70	.....	.....	.....
Los Angeles	Buffalo	15.41	.....	.....	.....	.....	46.66
Mansfield	Cleveland & Toledo	1.94	27.19	27.69	27.69	28.19	.....
Mansfield	Buffalo	3.36	.....	.....	.....	.....	34.61
Philadelphia	Swedeland	.84	27.09	27.59	28.09	28.59	.....
Philadelphia	Birdsboro	1.24	.....	.....	.....	.....	32.49
San Francisco	Provo	4.95	28.20	28.70	.....	.....	.....
San Francisco	Buffalo	15.41	.....	.....	.....	.....	46.66
Seattle	Provo	4.95	28.20	28.70	.....	.....	.....
Seattle	Buffalo	15.41	.....	.....	.....	.....	46.66
St. Louis	Granite City	.50	25.75	26.25	26.25	26.75	.....
St. Louis	Buffalo	7.07	.....	.....	.....	.....	38.32

(1) Struthers Iron & Steel Co., Struthers, Ohio, may charge 50¢ per ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Charcoal pig iron base prices for Lyles, Tenn., and Lake Superior furnaces, $33.00 and $34.00, respectively. Newberry Brand of Lake Superior charcoal iron $39.00 per g.t., f.o.b. furnace, by order L 39 to RPS 10, Apr. 11, 1945, retroactive to Mar. 7, 1945. Delivered to Chicago, $42.34. High phosphorus iron sells at Lyles, Tenn., at $28.50.

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorous content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. Effective Mar. 3, 1943, $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron and bessemer ferrosilicon up to and including 14.00 pct silicon covered by RPS 10 as amended. Silvery iron, silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—$31.25; f.o.b. Buffalo—$32.50. Add $1.00 per ton for each additional 0.50 pct Si. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for prices of comparable analysis.

Ferromanganese

78-82% Mn, maximum contract base price per gross ton, lump size, f.o.b. car at Baltimore, Philadelphia, New York, Birmingham, Rockdale, Rockwood, Tenn.

Carload lots (bulk)	$135.00
Less ton lots (packed)	148.50
F.o.b. Pittsburgh	139.50

$1.70 for each 1% above 82% Mn; penalty, $1.70 for each 1% below 78%.

Ferromanganese Briquets

Contract prices per pound of briquet, f.o.b. shipping point, freight allowed to destination. Approx. 66% contained Mn. Add 0.25¢ for spot sales.

	Eastern	Central	Western
Carload, bulk	6.05¢	6.30¢	6.60¢
Ton lots	6.65¢	7.55¢	8.55¢
Less ton lots	6.80¢	7.80¢	8.80¢

Manganese Metal

Contract basis lump size, per pound of metal, f.o.b. shipping point with freight allowed. Spot sales add 2¢ per lb.

96-98% Mn, .2% max. C, 1% max. Si, 2% max. Fe.

Carload, bulk	30¢
L.c.l. lots	32¢

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	34¢
Ton lots	36¢
Less ton lots	38¢

Spiegeleisen

Maximum base contract prices per gross ton, lump, f.o.b. Palmerton, Pa.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Carloads	$35.00	$36.00
Less ton	47.50	48.50
F.o.b. Pittsburgh, Chicago	40.00	

Low-Carbon Ferromanganese

Contract prices per pound of manganese contained, lump size, f.o.b. shipping point, freight allowed to destination, eastern zone. Add 0.25¢ for spot sales.

	Carloads, Ton	Less
0.06% C, 0.06% P, 90% Mn	23.00¢	23.40¢ 23.65¢
0.10% max. C, 1% or 2% max. Si	23.00¢	23.40¢ 23.65¢
0.15% max. C, 1% or 2% max. Si	22.00¢	22.40¢ 22.65¢
0.30% max. C, 1% or 2% max. Si	21.00¢	21.40¢ 21.65¢
0.50% max. C, 1% or 2% max. Si	20.00¢	20.40¢ 20.65¢
0.75% max. C, 7.00% max. Si	16.00¢	16.40¢ 16.65¢

Electric Ferrosilicon

OPA maximum base price cents per pound contained Si, lump size in carloads, f.o.b. shipping point with freight allowed.

	Eastern	Central	Western
50% Si	6.65¢	7.10¢	7.25¢
75% Si	8.05¢	8.20¢	8.75¢
80-90% Si	8.90¢	9.05¢	9.55¢
90-95% Si	11.05¢	11.20¢	11.65¢

Silvery Iron

Si 14.01 to 14.50%, $45.50 per G. T. f.o.b. Jackson, Ohio; $48.75 f.o.b. Keokuk, Iowa; $46.75 f.o.b. Niagara Falls. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%. Covered by MPR 405.

Silicon Metal

OPA maximum base price per pound of contained Si, lump size, f.o.b. shipping point with freight allowed to destination, for l.c.l. above 2000 lb, packed. Add 0.25¢ for spot sales.

	Eastern	Central	Western
96% Si, 2% Fe	13.10¢	13.55¢	16.50¢
97% Si, 1% Fe	13.45¢	13.90¢	16.80¢

Ferrosilicon Briquets

OPA maximum base price per pound of briquet, bulk, f.o.b. shipping point with freight allowed to destination. Approximately 40% Si. Add 25¢ for spot sales.

	Eastern	Central	Western
Carload, bulk	3.35¢	3.50¢	3.65¢
2000 lb-carload	3.80¢	4.20¢	4.25¢

Silicomanganese

Contract basis lump size, per pound of metal, f.o.b. shipping point with freight allowed. Add 25¢ for spot sales. 65-70% Mn, 17-20% Si, 1.5% max. C.

Carload, bulk	6.05¢
2000 lb to carload	6.70¢
Briquet, contract basis, carlots, bulk freight allowed, per lb	5.80¢
2000 lb to carload	6.30¢
Less ton lots	6.55¢

Ferrochrome

(65-72% *Cr*, 2% *max. Si*)

OPA maximum base contract prices per pound of contained Cr, lump size in carload lots, f.o.b. shipping point, freight allowed to destination. Add 0.25¢ per lb contained Cr for spot sales.

	Eastern	Central	Western
0.06% C	23.00¢	23.40¢	24.00¢
0.10% C	22.50¢	22.90¢	23.50¢
0.15% C	22.00¢	22.40¢	23.00¢
0.20% C	21.50¢	21.90¢	22.50¢
0.50% C	21.00¢	21.40¢	22.00¢
1.00% C	20.50¢	20.90¢	21.50¢
2.00% C	19.50¢	19.90¢	21.00¢
66-71% Cr, 4-10% C	13.00¢	13.40¢	14.00¢
62-66% Cr, 5-7% C	13.50¢	13.90¢	14.50¢

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low-carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N. High-carbon type: 66-71% Cr, 4-5% C, 0.75% N. Add 5¢ per lb to regular high-carbon ferrochrome price schedule.

Ferrochrome Briquets

Contract prices per pound of briquet, f.o.b. shipping point, freight allowed to destination. Approx. 60% contained chromium. Add 0.25¢ for spot sales.

	Eastern	Central	Western
Carload, bulk	8.25¢	8.55¢	8.95¢
Ton lots	8.75¢	9.25¢	10.75¢
Less ton lots	9.00¢	9.50¢	11.00¢

Calcium—Manganese—Silicon

Contract prices per pound of alloy, lump size, f.o.b. shipping point, freight allowed to destination.

16-20% Ca, 14-18% Mn, 53-59% Si. Add 0.25¢ for spot sales.

	Eastern	Central	Western
Carloads	15.50¢	16.00¢	18.05¢
Ton lots	16.50¢	17.35¢	19.10¢
Less ton lots	17.00¢	17.35¢	19.60¢

Calcium Metal

Eastern zone contract prices per pound of metal, f.o.b. shipping point, freight allowed to destination. Add 5¢ for spot sales. Add 0.9¢ for central zone; 0.49¢ for western zone.

	Cast	Turnings	Distilled
Ton lots	$1.80	$2.30	$5.00
Less ton lots	2.30	2.80	5.75

Chromium—Copper

Contract price per pound of alloy, f.o.b. Niagara Falls, freight allowed east of the Mississippi. 2-11% Cr, 88-90% Cu, 1.00% max. Fe, 0.50% max. Si. Add 2¢ for spot sales.

Shot or ingot	45¢

Ferroboron

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed to destination. Add 5¢ for spot sales. 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% Max. C.

	Eastern	Central	Western
Ton lots	$1.20	$1.2075	$1.229
Less ton lots	1.30	1.3075	1.329

Manganese—Boron

Contract prices per pound of alloy, f.o.b. shipping point, freight charges allowed. Add 5¢ for spot sales.

75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.

	Eastern	Central	Western
Ton lots	$1.89	$1.903	$1.935
Less ton lots	2.01	2.023	2.055

Nickel—Boron

Spot and contract prices per pound of alloy, f.o.b. shipping point, freight allowed to destination.

15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.

	Eastern	Central	Western
11,200 lb or more	$1.90	$1.9125	$1.9445
Ton lots	2.00	2.09125	2.0445
Less ton lots	2.10	2.1125	2.1445

Other Ferroalloys

Ferrotungsten, standard grade lump or ¼X down, packed f.o.b. plant at Niagara Falls, New York, Washington, Pa., York, Pa., per pound contained tungsten, 10,000 lb or more	$1.90
Ferrovanadium, 35-55%, contract basis, f.o.b. plant, usual freight allowances, per pound contained V.	
Openhearth	$2.70
Crucible	$2.80
Primos	$2.90
Cobalt, 97% min., keg packed, contract basis, f.o.b. producers plant, usual freight allowances, per pound of cobalt metal	$1.50
Vanadium pentoxide, 88-92% V_2O_5 technical grade, contract basis, any quantity, per pound contained V_2O_5. Spot sales add 5¢ per lb contained V_2O_5	$1.10
Silcaz No. 3, contract basis, f.o.b. plant with usual freight allowances, per pound of alloy.	
carload lots	25¢
2000 lb to carload	26¢
Silvaz No. 3, contract basis, f.o.b. plant with freight allowances, per pound of alloy.	
carload lots	58¢
2000 lb to carload	59¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed 50 lb and over, max. based on rate to St. Louis	
No. 1	87.5¢
No. 6	60¢
No. 79	45¢
Bortram, f.o.b. Niagara Falls	
Ton lots, per lb	45¢
Less ton lots, per lb	50¢
Ferrocolumbium, 50-60%, contract basis, f.o.b. plant with freight allowances, per pound contained Cb.	
2000-lb lots	$2.25
Under 2000-lb lots	$2.30
Ferrotitanium, 40-45%, 0.10%C. max. f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti	$1.23
Less ton lots	$1.25
Ferrotitanium, 20-25%, 0.10%C. max., ton lots, per pound contained titanium	$1.35
Less ton lots	$1.40
High-carbon ferrotitanium, 15-20%, 6-8% carbon, contract basis, f.o.b. Niagara Falls, N. Y. freight allowed east of Mississippi, north of Baltimore and St. Louis, per carload	$142.50
Ferrophosphorus, 18% electric or blast furnaces, f.o.b. Anniston, Ala., carlots, with $3 unitage freight equalled with Rockdale, Tenn., per gross ton	$58.50
Ferrophosphorus, Electrolytic 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., $3 unitage freight equalized with Nashville, per gross ton	$75.00
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., any quantity, per pound contained Mo	95¢
Calcium molybdate, 40-45%, f.o.b. Langeloth and Washington, Pa., any quantity, per pound contained Mo	80¢
Molybdenum oxide briquets, 48-52% Mo f.o.b. Langeloth, Pa., per pound contained Mo	80¢
Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo	80¢
Zirconium, 35-40%, contract basis, f.o.b. producer's plant with freight allowances, per pound of alloy. Add ¼¢ for spot sales	
Carload lots	14¢
Zirconium, 12-15%, contract basis, lump f.o.b. plant usual freight allowances, per pound of alloy	
Carload, bulk	4.60¢
Alsifer (approx. 20% Al, 40% Si and 40% Fe), contract basis, f.o.b. Niagara Falls, carload, bulk	5.75¢
Ton lots	7.25¢
Simanal (approx. 20% Si, 20% Mn, 20% Al), contract basis, f.o.b. Philo, Ohio, with freight not to exceed St. Louis rate allowed, per pound.	
Car lots	8.00¢
Ton lots	8.75¢
Less ton lots	9.25¢

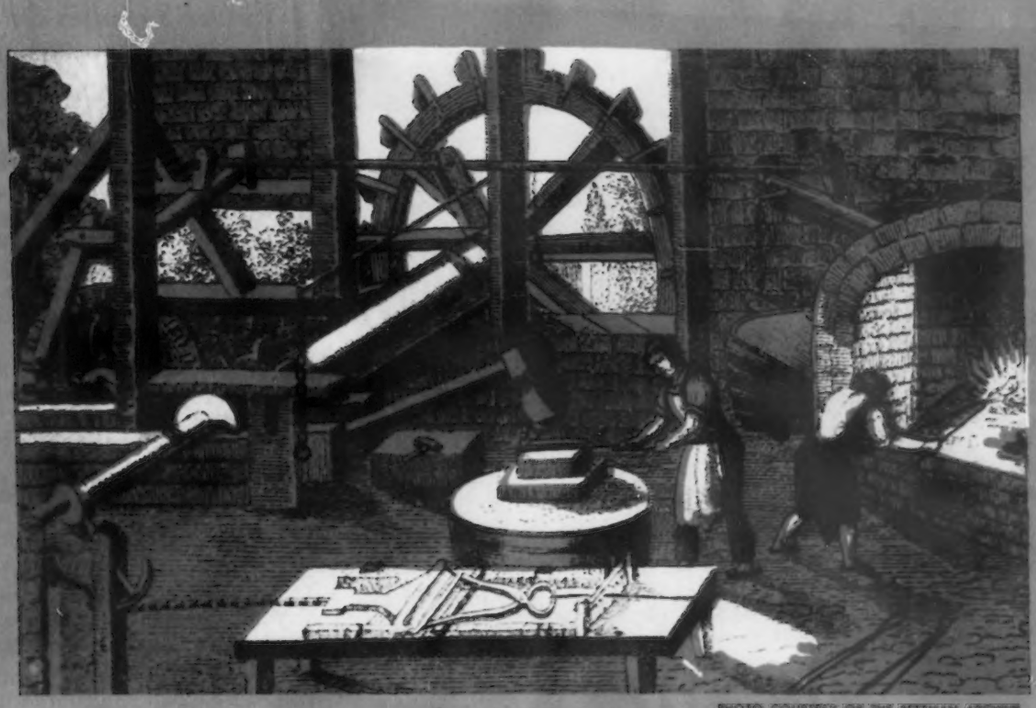


PHOTO COURTESY OF THE BETTMAN ARCHIVE

FROM A METAL-MASTER'S "FAMILY ALBUM"

WHEN FORGE SHOPS LOOKED LIKE THIS

STANDARD STEEL'S present home was a metal production center

This highly mechanized forge shop represented advanced practice in the early 1800's. Power from the giant undershot wheel not only operated the heavy trip hammer, but also pumped the bellows, and provided pull for the ingenious primitive draw-bench in the foreground. Yet when this equipment was a marvel of progress, Standard Steel's ancestor, "Freedom Forge" was already a going concern. As early as 1811 a blast furnace was erected, which was replaced in 1820 with another having a stack 20-feet high and a bosh 7 feet in diameter. Output was from 12 to 15 tons of blooms and bar iron a week.

Standard Steel's present forge shop would amaze the metal workers of yesterday. Fourteen steam hammers with capacities of from 3500 to 12,000 pounds and six presses with from 600 to 2500 tons capacity produce 15,000 tons of locomotive forging and 30,000 tons of miscellaneous forgings annually. Any pressed or hammered forging up to 25 tons weight can be handled.

Whenever you need forgings or castings, remember that 151 years of accumulated experience plus complete modern facilities are waiting to serve you here. To simplify your problems, "Standardize on Standard."

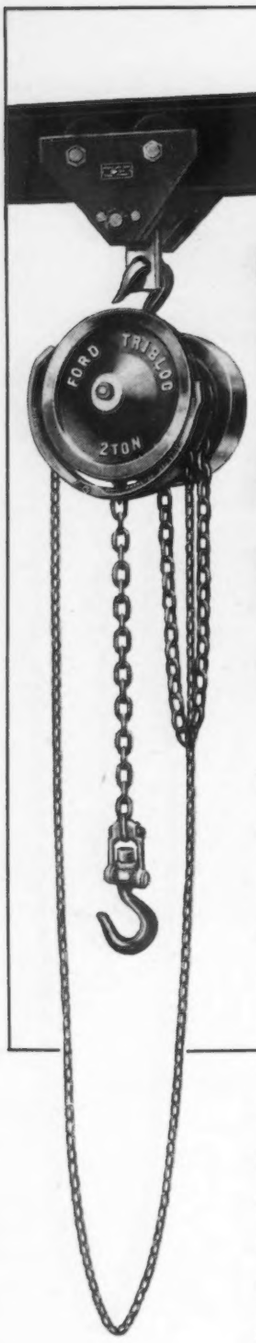
BLW THE BALDWIN GROUP

BALDWIN

FORGINGS AND CASTINGS

The Baldwin Locomotive Works, Standard Steel Works Division, Burnham, Pa., U.S.A. Offices: Philadelphia, New York, Chicago, St. Louis, Washington, Boston, San Francisco, Cleveland, Detroit, Pittsburgh, Houston, Birmingham.

"STANDARDIZE ON STANDARD" FOR YOUR FORGINGS AND CASTINGS



FORD HOISTS
FOR FAST PRODUCTION

This FORD HOIST Unit consists of a Ball-Bearing Tribloc, Self-Aligning Roller Bearing Trolley, a 15′ I-Beam with end stops and 2 Utility Universal Hangers. Capacities ¼ to 2 tons.

A compact material-handling package—complete, ready for immediate installation—at amazingly low cost. Can be installed in a few minutes by your own men. If need dictates, it can readily be moved for temporary emergency work. Additional track, hangers, trolleys and hoists available.

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Future Supplies Of Secondary Aluminum Diminishing Rapidly

Washington

• • • **Drastic downward** revision of estimates of future supplies of secondary aluminum available for disposal as surplus government property was forecast at a recent meeting of the aluminum smelters industry advisory committee of the Surplus Property Administration.

Only about 1 billion lb is now in sight, whereas six months ago it was estimated that 2½ billion lb would be available before June 1947.

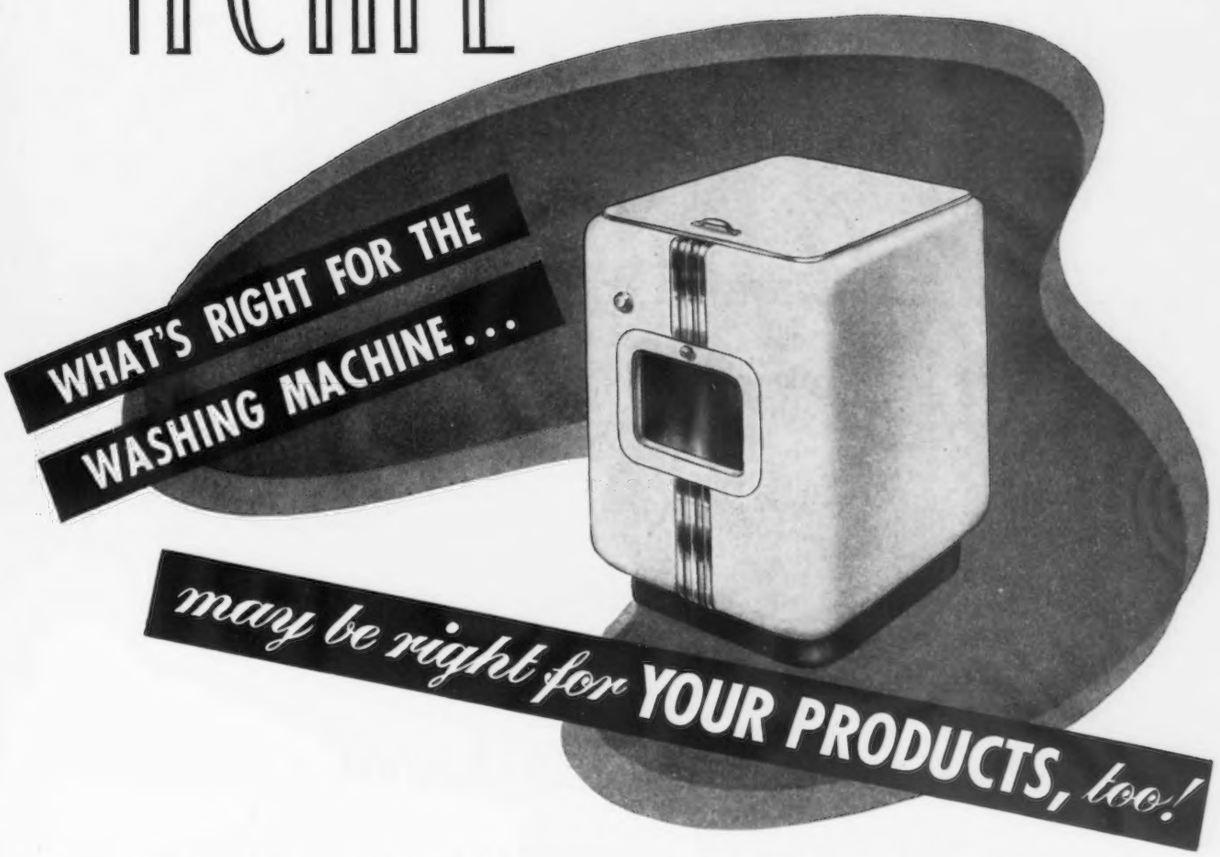
In view of the prospective decrease in supply, the committee agreed on the necessity of some method of insuring equitable distribution of available supplies beyond present SPA regulations, which apply only to floor prices and to reports by disposal and owning agencies of large individual transactions to SPA. It recommended appointment of a task group representing smelters, producers and dealers to suggest a method of allocation.

It was also pointed out that unless the SPA were provided with adequate statistical information on inventories and purchases of scrap and secondary ingot and related data by the industry, it might have to adopt protective restrictions on disposal which would be unsatisfactory to the industry and the Administration.

Importation of aluminum scrap, from supplies now scheduled for disposal abroad in accordance with the general policy of the Surplus Property Act, was suggested as a means of assuring the industry of material for planned developments in production.

The Surplus Property Administration announced that to simplify problems of administration, it had rescinded Order 4, Reg. 9, and revised Special Order 26. The effect of the changes is to eliminate reference to the Aluminum Co. of America in the review of sales of aluminum metal, and to retain the requirement that proposed sales by RFC to any individual buyers of more than 5 million lb of metal in any single month be reviewed by the SPA. Basic policies of SPA are not affected by the changes, it was pointed out.

• ACME ALUMINUM ALLOY CASTINGS



THERE'S nothing better than aluminum for washing machines. Aluminum is light—easy to handle, easy to move, resists corrosion. Aluminum helps give washing machines better operation, longer life, lighter weight.

Then how about *your* product? Couldn't it, too, make use of these advantages? And, besides, aluminum machines easily—and is readily cast into intricate shapes. Wartime progress has made aluminum alloys even stronger than before.

Why not ask Acme about the advantages of "aluminizing" your product? Acme engineers have spent many years of work and study on aluminum and its alloys. And they are always glad to lend a hand in any problem of design.

Acme Aluminum Permanent Mold (and Sand) Castings are produced in one of the largest, newest and best-equipped foundries in the United States. Consult Acme on your castings problems, without obligation.

ACME ALUMINUM ALLOYS, INC.

DAYTON 3, OHIO

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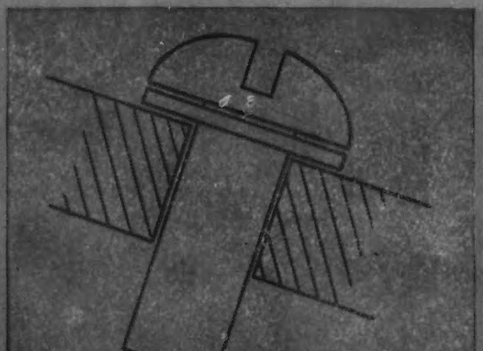
SEMS
IS YOUR ANSWER!

SEMS ARE PRE-ASSEMBLED WASHER AND SCREW UNITS IN WHICH THE WASHER IS HELD ON THE SCREW BY THE ROLLED THREAD AND IS FREE TO ROTATE. (SEE ILLUSTRATIONS BELOW)

HOW SEMS ARE MADE

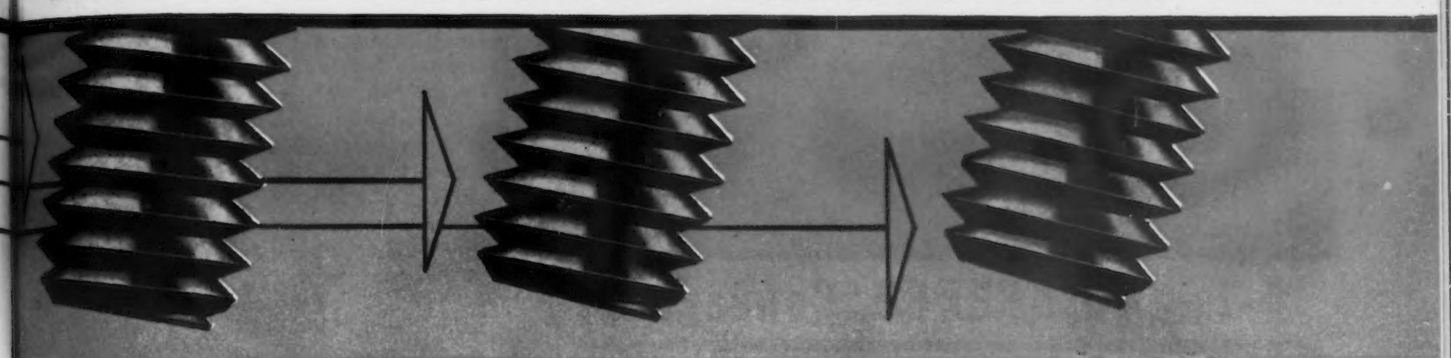
The washer is specially designed to fit closely on the screw blank.



The washer is placed on the screw blank by machine and then the thread is rolled.

The rolled thread holds the washer on the screw but allows it to rotate.

PRE-ASSEMBLED TO REDUCE YOUR COSTS!



THE USE OF SEMS ELIMINATES TIME-WASTING HAND ASSEMBLY OF WASHERS AND SCREWS . . . ONLY ONE UNIT TO HANDLE . . . FASTER, EASIER TO DRIVE . . . ASSURES BETTER FASTENINGS AND IMPROVED PRODUCT PERFORMANCE.

SEMS ARE AVAILABLE FROM THE FOLLOWING FASTENING MANUFACTURERS:

American Screw Co.
Providence, R. I.

Central Screw Co.
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Chandler Products Corp.
Cleveland, O.

Continental Screw Co.
New Bedford, Mass.

The Corbin Screw Corp.
New Britain, Conn.

Eaton Mfg. Co.
Reliance Spring Washer Div.
Massillon, O.

The Lamson & Sessions Co.
Cleveland, O.

Manufacturers Screw Products
Chicago, Ill.

National Lock Co.
Rockford, Ill.

The National Screw & Mfg. Co.
Cleveland, O.

New England Screw Co.
Keene, N. H.

Pheoll Manufacturing Co.
Chicago, Ill.

Progressive Manufacturing Co.
Torrington, Conn.

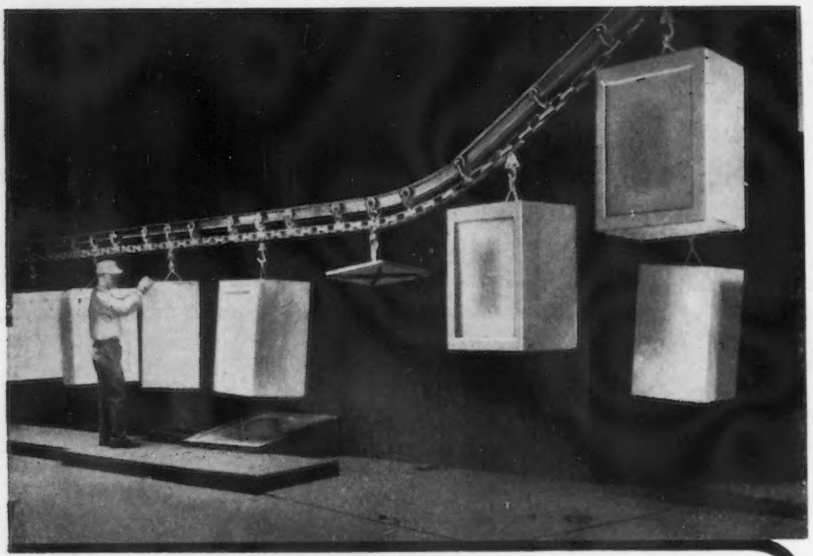
Russell, Burdsall & Ward Bolt & Nut Co.
Port Chester, N. Y.

Scovill Manufacturing Co.
Waterbury, Conn.

Shakeproof Inc.
Chicago, Ill.

Steel Co., of Canada, Ltd.
Hamilton, Ont., Canada

★CUT COSTS... Increase Profits with "Endless Stream" Production!



A-F ENGINEERED Conveyors will solve your problems of "INDOOR TRANSPORTATION"

TODAY, you forward-looking plant executives are considering your costs more carefully than ever before! You realize that the cost of "indoor transportation"—moving materials and products throughout the plant—is a big item of expense which can—and must—be reduced considerably.

For this reason many of America's leading plants are installing conveyor systems engineered by Alvey-Ferguson. The results—faster "endless stream" production, reduced employee fatigue, lower costs and increased profits!

Whether you are building a new plant or making your present one more efficient, NOW is the time to investigate the savings an A-F Conveyor System can give you. Alvey-Ferguson engineers are backed by forty-five years of experience in your field. This "know how" is at your service. Write, without obligation, today.

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Announces Plans For New Continuous Strip Mill in South Africa

London

• • • **Plans for the** installation of a continuous strip mill in the Vanderbijl Park works of the South African Iron & Steel Industrial Corp. have now reached the detailed proposal stage, according to a statement made in Pretoria recently by the chairman of the organization. The new mill will be an adjunct to the plate mill laid down at that site by the same firm during the war.

Speaking of the expanding market for steel products in general in South Africa, H. J. Van der Bijl, chairman of the firm, detailed the efforts made to expand the product line and ingot capacity to meet increased demands. At the present time, the plate mill is the only installation at Vanderbijl Park, and is using raw material in the form of steel slabs from the Iscor works in Pretoria. The mill is at present operating on one turn only, at an annual rate of about 200,000 gross tons per year.

The possibility of installing a continuous strip mill on the site was recognized when the plate mill was drawn up, and plans now call for the production of all classes of flat-rolled products, including light plates, sheets, strip and down to tin plate gages. Land has already been acquired at the site to take care of future residential and production requirements.

In addition to the strip mill to cater to the expanding South African flat-rolled market, plans call for the construction of the necessary coke ovens, blast furnaces and steel melting furnaces to furnish raw material for the mill.

According to the statement by Dr. Van der Bijl, the only disquieting feature of the future development in South Africa is the limited known reserves of coking coal. He stated that at present coal of coking quality is being used for other purposes where it is not needed, and urged the prompt application of conservation measures to protect the Union's industrial future.

Outlining wartime extensions of the firm's plants, the chairman stated that the installation of the

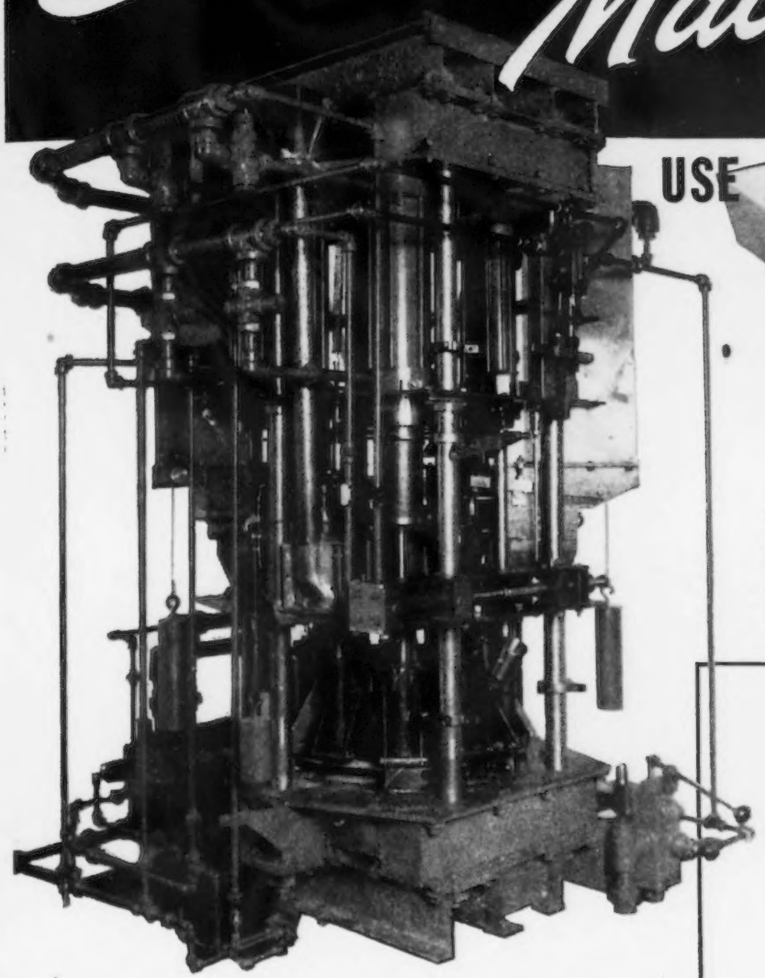
(CONTINUED ON PAGE 130)

NOW IT CAN BE TOLD

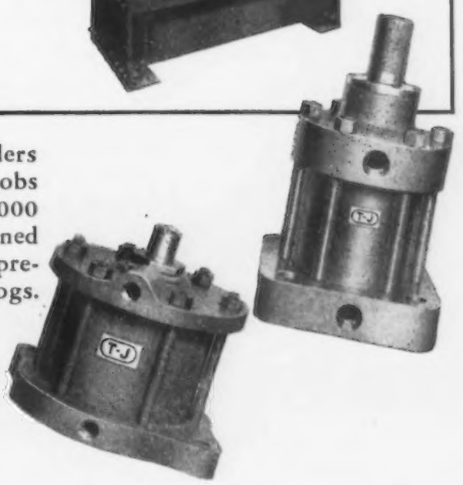
Shell-loading Machines-

USE T-J

CYLINDERS



T-J Hydraulic Cylinders on these machines press different ingredients into shells at very accurate pressures. At left, rotary type press—which also employs small cylinder (shown on front) for indexing. Below, "straight eight" type loading press.



Among the wide range of war production jobs performed by T-J Cylinders is this application on shell-loading machines manufactured by Proctor & Schwartz, Inc., Philadelphia. The machines are hydraulically operated and *entirely automatic*—depending on the high efficiency and accuracy of T-J Cylinders!

Similarly—for hundreds of tough jobs of power movement in industry today—you'll find T-J Air and Hydraulic Cylinders a real time-saver, muscle-saver and money-saver! Ideal for jobs where pushing, pulling or lifting is needed . . . 100 lb. or 50,000 lb. Available in many standard sizes and styles . . . both cushioned and non-cushioned types. Backed by 29 years' experience . . . precision-built for unbeatable performance! Write for latest catalogs. The Tomkins-Johnson Co., Jackson, Mich.

FOR TOUGH JOBS SPECIFY

TOMKINS-JOHNSON

RIVITORS...AIR AND HYDRAULIC CYLINDERS...CUTTERS...CLINCHORS

T-J

PAINTED FOR JONES & LAUGHLIN STEEL CORPORATION BY ORISON MACPHERSON

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(Advertisement)

YOU COULDN'T SHIP MUCH FREIGHT OR SHIP IT FAR OR FAST— WITHOUT STEEL

Without steel you might still be shipping your goods in canal boats or covered wagons or by means of the little iron locomotives with the big stacks that labored to pull short trains of small wooden freight cars, and were often stalled by winter storms.

But, today, great, powerful steel locomotives are the shuttles that weave this continent into a nation. They pull long trains of big steel freight cars on heavy rails over mountains and plains, across bridges, through tunnels, up elevated approaches, and into vast freight terminals, and come in on time, no matter what the weather.

This high-speed merchandise freight service is a result of cooperation between the railroads and the steel manufacturers in development through research of better steels. One of these is Otiscoloy, a lighter, stronger J&L steel with which rail carriers can reduce weight of cars and increase pay loads. The many steels developed for every phase of railroading will enable more freight to be transported far and fast with security and dispatch.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH, PENNSYLVANIA

J&L STEEL

LIGHTER, STRONGER, CONTROLLED QUALITY STEELS

RAIL FREIGHT

500-ton steel horse, the new gear drive, turbine locomotive of The Pennsylvania Railroad (see sketch), is a great advance from the days of the little "iron horse" of the last century. With rated capacity of 6,900 horsepower at the turbine shaft, this new Baldwin-Westinghouse built locomotive, covering 123 feet of track, will be able to maintain fast and heavy freight and passenger train schedules, smoothly, with less wear on the steel rails.

116½ million tons iron ore hauled by Great Northern in 4½ war years is all-time high.

Interchangeable locomotives, steel constructed, steam, electric or Diesel powered, that can haul heavy fast freight trains one day and crack passenger trains the next, save operating time and money.

1st iron rails made in U.S. were rolled in Scranton, Pa., century ago, for Erie R.R.

On the Santa Fé, 5400 h.p. Diesels provide ample power to handle heavy freight trains over mountain grades. A fleet of 80 of them is now in operation.

A-B air brakes for control of long freight trains were brought into general use in 1933.

The new B&O Mallets, big, steam locomotives that mean faster schedules and haulage of greater tonnage, are 125 feet, 3⅝ inches long, weigh 1,010,700 pounds, have a 115,000 pound tractive force.

Sails for railroad power were tried unsuccessfully by first officials of B&O in 1820's.

N. Y. Central's 26 giant "Niagaras," new, 6,000 h.p., coal-burning locomotives for high-speed freight or passenger service, bring their locomotive fleet up to 3650.

Getting the "highball" is a phrase that originated in pioneer railroading days when the signal of a clear track ahead was a white ball hoisted to the top of a tall pole.

Phones on rolling trains are a creation of Pennsylvania Railroad research worked out with Union Switch and Signal Co. Locomotive engineer in cab, conductor in caboose, towerman in signal tower and crew of passing train may communicate with each other.

1,773,049 freight cars in 1944 were in service on Class I railways.

"Big Boy," Union Pacific's new, powerful steam locomotive, designed to haul heavy loads on mountain grades, is 132 ft. 9⅞ in. long, weighs 1,197,800 lbs. Tractive effort is 135,375 lbs., max. speed 80 m.p.h., 70 m.p.h. continuous speed.

Lighter steel freight cars constructed of Otiscoloy are being turned out by car builders for railroads interested in reduction in weight up to 25%, and increase in pay load. Otiscoloy is a high-tensile steel, created and produced by the Jones & Laughlin Steel Corporation. Otiscoloy resists corrosion, withstands abrasion and possesses a high degree of weldability.

LONG LIFE
CLEAN CUTTING
FAST CUTTING
DEPENDABLE
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Makers of hand and power hack saw blades, frames and metal cutting band saw blades.

7892

(CONTINUED FROM PAGE 126)

plate mill had enabled them to offer a complete range of plates up to the maximum lengths, widths and thicknesses, whereas previously they had only been able to offer light plates from their sheet works. The installation of a medium mill made possible a complete line of intermediate products.

He described the production of both black and galvanized steel wire in an improvised plant which was set up during the war to help ease the shortage of wire, especially for baling, binding and fencing. The firm is also now making steel window sections, with the entire output being used by the local window manufacturing companies.

Production has recently commenced on bright steel shafting and other bright bars in a plant especially installed for the purpose. The range of bright bars is limited, as all of the machinery ordered has not yet been installed, but this is due to be remedied in the coming year.

Sales of pig iron by the firm during the year ended June 30, 1945, amounted to 41,909 gross tons. During the same period an associated company, African Metals Corp., Ltd., supplied 52,407 gross tons of pig iron. The total, 94,316 gross tons, with the exception of a small amount of cold blast pig iron represented the entire amount supplied in the Union. The chairman indicated that now that Iscor's wartime plant extensions were completed, virtually the whole output of iron from their three blast furnaces was required for steelmaking purposes, and the pig iron demand would to an increasing extent be met from the African Metals Corp.'s plant at Newcastle, Natal, where a second blast furnace has recently been completed and put into operation.

Total shipments of rolled and drawn steel products from Iscor's works at Pretoria and Vanderbijl Park during the year under review amounted to 359,423 gross tons. In addition, 13,792 gross tons of molten steel were diverted to bomb production, and 747 gross tons of forgings were shipped from the forge shop. Annual shipments for the past five years ended June 30, were, 1941, 243,914 gross tons; 1942, 242,410; 1943, 240,012; 1944, 316,914; 1945, 359,423.

The production for the year ending in June, 1945, is broken down approximately as follows: semi-finished, 71,916 gross tons; structural sections, bars, rods and wire, 115,284 gross tons; rails, various weights from 30 lb up to 96 lb per yd, 34,616 gross tons; sheets, black and galvanized, flat and corrugated, 63,743 gross tons; plates, 67,407 gross tons; miscellaneous, 6457 gross tons.

A general price increase of about 11 pct on the firm's main finished products since the beginning of the war was disclosed by Dr. Van der Bijl in a comparison of the prices. He gave as Iscor's current basis prices the following (Converted at the rate of $4.03 to the £): structural sections, $69; merchant bars and rods, $70; heavy rails, $69; light rails, $63.50; plates, $70; black sheets, $86.50; galvanized corrugated sheets, $106.

According to his statement the net prices of his firm's steel delivered in the Rand were $20 to $28 lower than those of American steel, and lower than the delivered costs of British steel by $28 to $36 per ton, on the assumption that American and British steels could be bought for export at the prices that are listed for the domestic markets.

Radiator Supervisors Buy Tonawanda Foundry

Buffalo

• • • **The Tonawanda Electric** Steel Casting Corp. of North Tonawanda has been acquired by three men who have been associated with the American Radiator & Standard Sanitary Corp. in Buffalo. They are: Joseph Sander, formerly superintendent of American Radiator's steel foundry, president; Charles A. Linburg, foundry foreman for American Radiator's malleable iron department, vice-president, and Albert Carter, who was chief clerk of Radiator's malleable and steel department, secretary and treasurer.

Assets, including the name of the Tonawanda firm, were purchased from Harry Lewis, who has operated the foundry for several years.

President Sander said the foundry is booked ahead for several months, with orders for general and miscellaneous carbon steel castings.

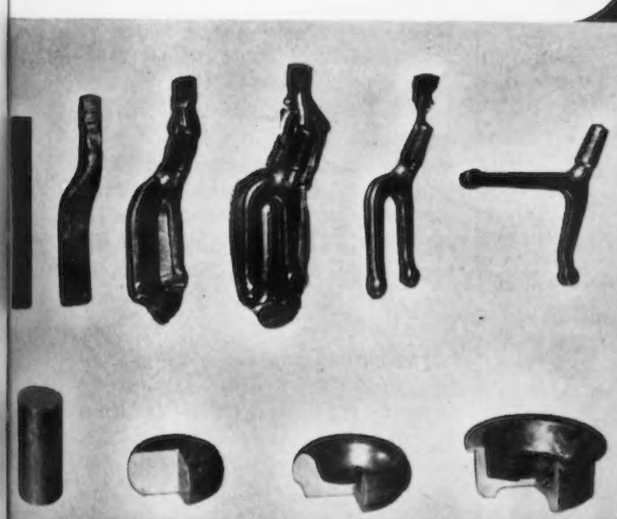
Automotive Forgings forged faster, better and at lower cost on

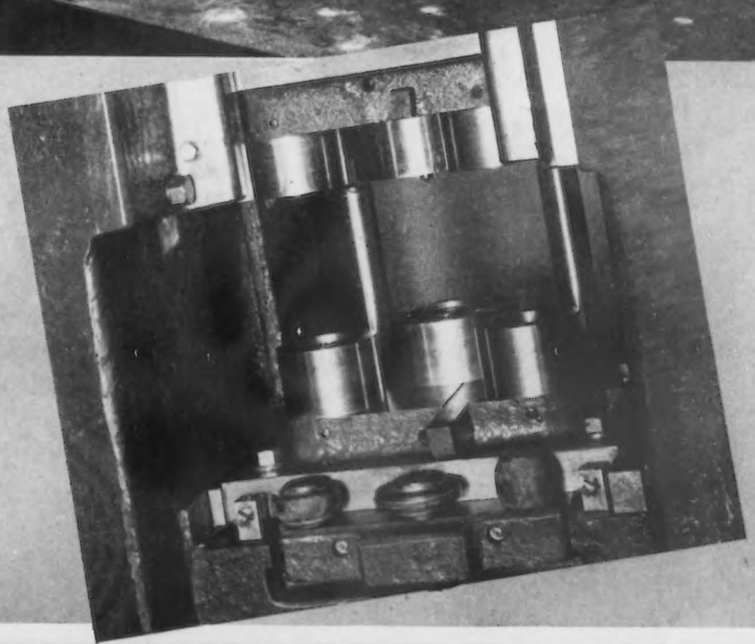
AJAX HIGH SPEED FORGING PRESSES

THE Ajax High Speed Forging Press has proved to be of exceptional advantage in the efficient production of a constantly widening range of forgings for the automotive industry.

Gear blanks, hub parts, knuckle support arms, connecting rods, differential ring gears, side gears, steering arms, bearing races and clutch pedals are but a few of the many parts which are being forged most profitably on Ajax Presses.

Write for Bulletin No. 75

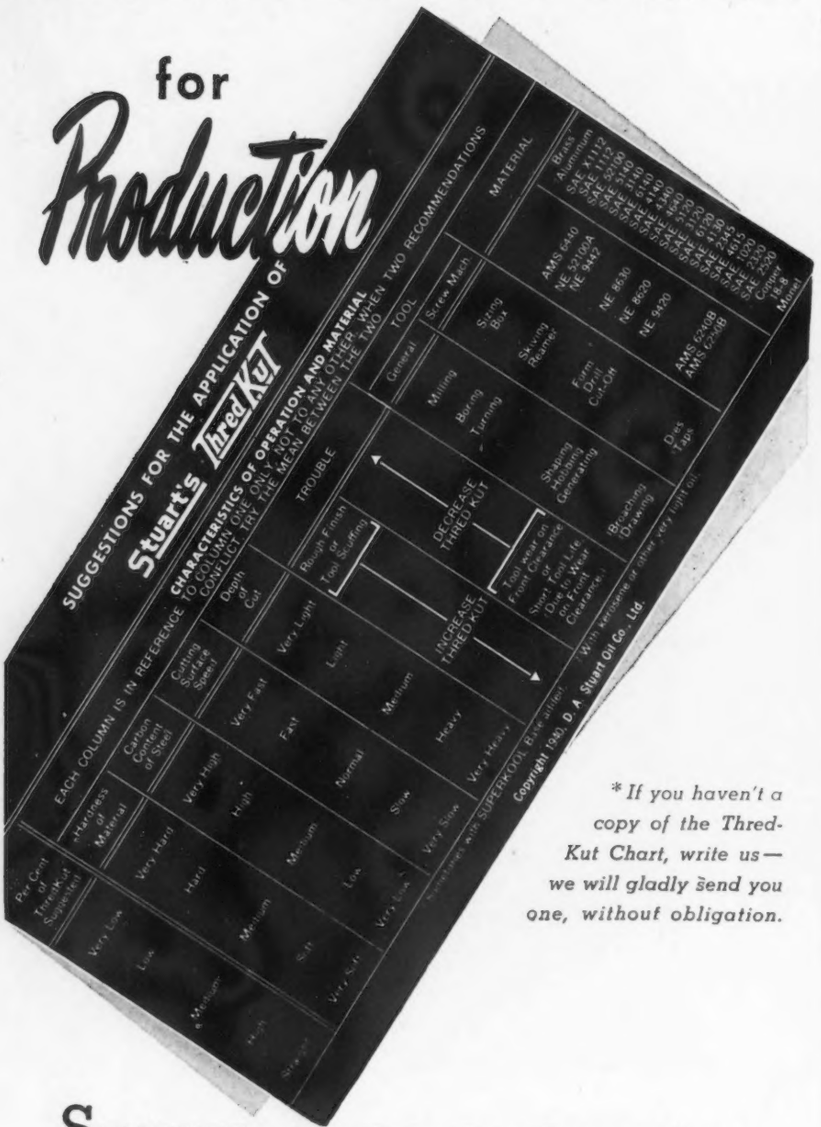




THE AJAX MANUFACTURING COMPANY
EUCLID BRANCH P. O. CLEVELAND 17, OHIO
110 S. DEARBORN ST. • CHICAGO 3, ILLINOIS
DEWART BUILDING • NEW LONDON, CONN.

INSURANCE POLICY

for *Production*


SUGGESTIONS FOR THE APPLICATION OF
Stuart's ThredKut
CHARACTERISTICS OF OPERATION AND MATERIAL
TO COLUMNS ONE ONLY NOT TO ANY OTHER WHEN TWO RECOMMENDATIONS CONFLICT TRY THE MEAN BETWEEN THE TWO
EACH COLUMN IS IN REFERENCE
MATERIAL
TOOL
TROUBLE
DECREASE THRED KUT
INCREASE THRED KUT
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** If you haven't a copy of the Thred-Kut Chart, write us— we will gladly send you one, without obligation.*

STUART'S ThredKut Heavy Duty Cutting Oil has played an important part in solving many of industry's toughest metal working problems. Reference to the time-tested ThredKut Chart* has insured the proper application of this versatile product in many production emergencies. Alert production executives will find these aids of great help in answering troublesome metal-working problems. D. A. Stuart Oil Co., Ltd., **2737 S. Troy Street, Chicago 23, Illinois.**

D. A. Stuart Oil CO.
LIMITED
ESTABLISHED 1865
Stocks in Principal Metal Working Centers

Gray Iron Foundries Require 15 Pct Labor Rise to Ease Backlog

Washington

• • • **Approximately 40,000** additional workers are needed in the gray iron castings industry to bring production of consumers goods up to the present demand according to a partially completed survey conducted by the Civilian Production Administration.

Reports received from 1280 foundries (prior to the current work stoppage in the steel industry) showed a total of 116,295 employees with 19,929 additional employees needed. Reports received to date were from somewhat less than 50 pct of the industry, CPA said.

A total of 1687 foundries submitted reports to CPA. Out of this group only 1344 were operating, 279 were closed, 46 had changed to production of products other than castings and 18 were closed by strikes.

A limited number of foundries located in Arizona, Arkansas, California, Colorado, Idaho, Montana, Oregon, Utah and Washington reported definite improvement in their manpower situation. This employment gain was due in no small measure, the CPA said, to returning veterans accepting jobs in the foundries. Similar conditions have been reported in isolated cases in several other states.

Indicated capacity of the 1381 gray iron foundries that submitted capacity figures is 702,432 average tonnage monthly. November production was 358,683 tons and the backlog of unfilled orders on Dec. 1, 1945, was 1,468,179 tons. The average backlog of unfilled orders on the books of the reported foundries was four months.

Indicated monthly capacity of the foundries closed by strikes prior to the general steel strike is 70,565 tons.

The reporting foundries disclosed the following delivery picture on gray iron castings at the present time:

	Pct
Current on deliveries	42
Behind schedule 2-8 weeks	25.6
Behind schedule 8-12 weeks	11.4
Behind schedule more than 12 weeks	15
Failed to give specific data	6

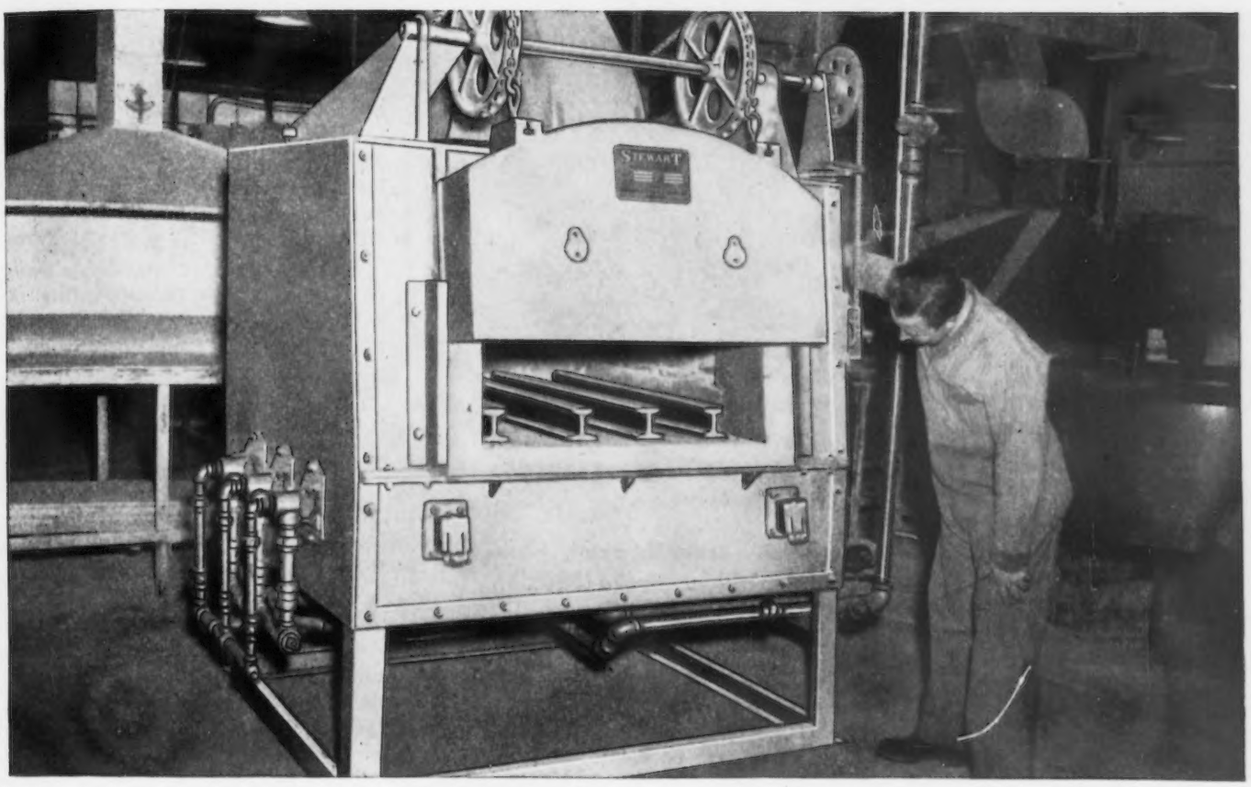
A TYPE AND SIZE FOR EVERY NEED

STEWART

THE BEST INDUSTRIAL FURNACES MADE

No. 61 OF A SERIES of Typical Installations

For PRODUCING SPECIALIZED CUTTING TOOLS at FANSTEEL METALLURGICAL CORPORATION



For baking out the core molds of Tantung cutting tools, perfected by Fansteel to fill the gap between conventional high-speed steel tools and cemented carbides, the Fansteel Metallurgical Corporation, North Chicago, uses two large Stewart gas-fired Oven Type Furnaces, illustrated above. This Corporation specializes in the production of Tantalum, Tungsten, Molybdenum and Columbium rare metals and parts and products made from them.

FREE ON REQUEST

STEWART

VEST-POCKET HEAT TREATING DATA BOOK

Seventy-two pages of charts, tables, diagrams, factual data . . . ready reference book for all types of engineers. Write Stewart, Dept. 110, for your personal copy.

The large number of small burners on these Stewart Furnaces assures an even distribution of heat, necessary for the uniform baking of the cores. The patented Seal-tite door, with the refractory slide, on these furnaces provides a positive seal and prevents infiltration of air into the heating chamber, thereby adding to the efficiency by preventing heat loss.

This installation is typical of the industrial furnaces Stewart engineers are building every day to meet the specified requirements of manufacturers all over the continent. Stewart builds, in addition, a full line of standard type furnaces.

STEWART INDUSTRIAL FURNACE DIVISION of CHICAGO FLEXIBLE SHAFT CO.

Main Office: **4433 Ogden Ave., Chicago 23, Ill. — *Canada Factory:* (FLEXIBLE SHAFT CO., LTD.) 321 Weston Rd., So., Toronto 9**

A letter, wire or 'phone call will promptly bring you information and details on STEWART furnaces, either units for which plans are now ready or units especially designed to meet your needs. Or, if you prefer, a STEWART engineer will be glad to call and discuss your heat treating problems with you.

This brake will develop a torque of 575 lbs. ft. or the equivalent of 100 HP at approximately 1000 RPM. Can be supplied in floor or motor mounted type for AC or DC current.

Floor Mounted Brake

Stearns MAGNETIC

BRAKES

Stop

HEAVY Loads

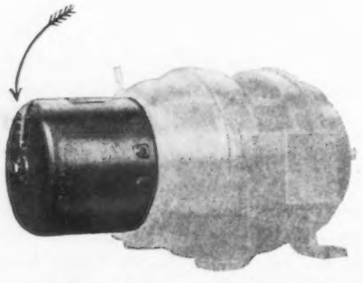
Up to *100 HP motor driven loads*, depending on speed, can be effectively retarded with Stearns Magnetic Disc Brakes.

If you have a problem involving one or a sequence of automatically controlled stops on motors or moving machinery, it will pay you to investigate Stearns Brakes.

The cost is so little, and the usefulness so great in dollar and cents value.

Bring your braking problems to our Brake Division. Stearns Brakes are being used efficiently and satisfactorily in hundreds of exacting operations.

Put them to work for you!



The magnetic brake with the lining wear indicator and manual release—distinctive, original.

Stearns SEPARATORS • ROLLS DRUMS • PULLEYS CLUTCHES • SPECIAL MAGNETS

MAGNETIC MFG. CO.

635 S. 28th St., Milwaukee 4, Wis.

Tonnage booked for future deliveries (by products):

	No. of Weeks
Heavy ingot mold producers	10
Chilled iron carwheels	10
Cast iron brake shoes	18
Cast iron pressure pipe	15
Cast iron soil pipe	38
Automotive castings	20
Radiators, boilers, furnaces, enamelware (bathtubs)	24
Cast Iron stoves	17
Farm implements	24

At the same time, CPA said that a 15 pct increase in employment in the malleable castings industry is needed to dislodge the 31-week backlog of orders.

Malleable (heat treated) castings make up only a small fraction of the total weight of refrigerators, vacuum cleaners, automobiles and other consumers goods items but the few pounds of castings needed per unit are vital, CPA pointed out.

A survey of 44 malleable iron foundries of the 115 operating in the United States yielded the following December monthly production picture:

	Tons
Capacity	36,993
Production	24,555
Shipments	23,538
Backlog	179,620

The backlog of the foundries reporting represents about 31 weeks at current production rate.

Of the 44 reporting foundries, it was disclosed that 16 were accepting orders, 18 were refusing orders and ten offered no comment. Employment totaled 15,917 men in this foundry group with 2300 additonal men needed to attain full production.

The following is a current picture of the shipping schedules of the 44 reporting foundries and a classification of their order backlog by product:

Shipping Schedules

	Pct
Current on their delivery	11.4
Behind schedule 2-8 weeks	25.0
Behind schedule 8-12 weeks	13.6
Behind schedule over 12 weeks	34.1
Failed to answer	15.9

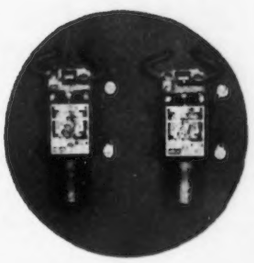
The backlog is broken up in the following end uses:

	Tons
Auto parts	41,923
Diesel engine parts	605
Electrical parts	4,332
Farm machinery	54,313
Textile machinery	770
Machine tools	2,600
Stoves	1,231
Pipe and fittings	19,614
Refrigerators	187
Boiler parts	37
Railroad supplies	11,634
Hardware	1,901
Mining machinery	1,319
Lawn mower parts	6,910
Bed parts	70
Tools	3,134
Road machinery	4,696
Trailer parts	1,169
Jacks (auto)	177
Ironing machine parts	220
Power transmission parts	8,604
Luggage parts	150
Oil refinery parts	44
Miscellaneous	13,981

How you benefit through these ADDED CRANE VALUES

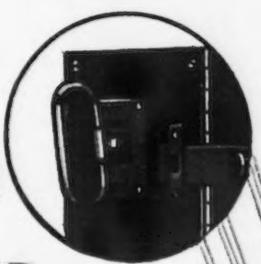
P&H's PROTECTIVE PANELS PROTECT

the CRANE



Overloading the crane is prevented by these positive relay trips. No damage to crane can occur because it will not operate until overload has been removed. Resetting of relay is accomplished by simple push button at operator's station.

the OPERATOR



This safety lock prevents access to the cabinet which houses the switchboard and live elements. Doors cannot be opened without first disconnecting the power. Doors must be closed to connect power. This important safety factor is an additional protection against industrial accidents.

the OWNER

Production delays are eliminated — crane service is more dependable. Here, costly fuse replacements are ended forever — maintenance is reduced to a minimum.

It will pay you to insist on these added values when you buy your next electric crane.

P&H

HARNISCHFEGER CORPORATION

ELECTRIC CRANES · EXCAVATORS · ARC WELDERS · P&H · HOISTS · WELDING ELECTRODES · MOTORS

ELECTRIC OVERHEAD CRANES

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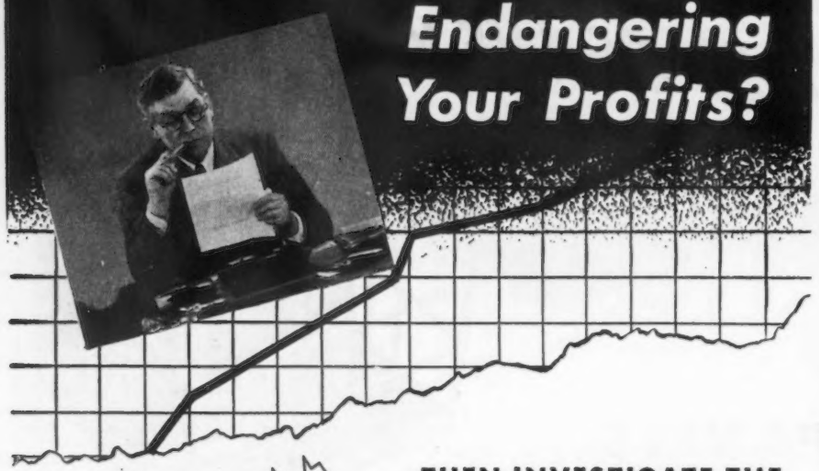
Are High Handling Costs Endangering Your Profits?



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PROVEN ECONOMIES of the ROSS System

ROSS Series 70 STRADDLE CARRIER

HEAVY DUTY STRADDLE CARRIERS AND LIFT TRUCKS . . BUILT FOR THE BIG JOBS!

ROSS Heavy Duty LIFT TRUCK

For handling a wide variety of materials in unit-packages, the Ross System is recognized by progressive industries as the highest standard of speed, efficiency and economy — recognition earned by a record of more than thirty years' *proven performance* . . .

If your handling problems are resulting in excessive production costs, let our engineers show you how ROSS Straddle Carriers and Lift Trucks can bring those costs to new low levels.

Get the complete details —
WRITE TODAY FOR ROSS BULLETIN IA-26.

World's First and Foremost COMPLETE Line of Heavy Duty STRADDLE CARRIERS and LIFT TRUCKS

THE ROSS CARRIER CO., BENTON HARBOR, MICHIGAN, U. S. A.

Direct Factory Branches and Distributors Throughout The United States and Canada.

ROSS

HEAVY DUTY MATERIALS-HANDLING EQUIPMENT

Appoints Additional Machine Tool Agents To Aid in Disposal

Washington

• • • **Appointments of 295 machine** tool dealers, distributors and manufacturers who will act as agents in resale of surplus government-owned machine tools and production equipment were announced recently by the War Assets Corp. These are in addition to those previously approved by WAC (THE IRON AGE, Jan. 24, p. 110). To date over 500 appointments have been approved with an additional 500 applications in the process of being screened by WAC regional directors who are authorized to make appointments.

Following is a list of additional machine tool dealer-agents approved by WAC:

ATLANTA

Cleveland Electric Co., 557 Marietta St., NW, Atlanta
C. Y. Strausz & Co., 319 Spring St., NW, Atlanta
Allison Machinery Co., 575 Edgewood Ave., SE, Atlanta
Southeastern Purchase & Sales Co., 1608 Candler Bldg., Atlanta

BIRMINGHAM

George M. Meriwether, 2226 Third Ave. North, Birmingham
Tool Engineering Service, 505 N 22nd St., Birmingham
Ace Machinery Co., 2216 First Ave. South, Birmingham
The Young & Vann Supply Co., 1729 First Ave. North, Birmingham
W. W. Whorten, 6226 First St. North, Birmingham
Birmingham Armature Electric Co., 821 N 21st St., Birmingham
R. E. Boggs, 1427 S 18th St., Birmingham

BOSTON

Henry S. Iversen Machinery Co., 205 Church St., New Haven, Conn.
The State Machinery Co., Inc., 865 Congress Ave., New Haven, Conn.
Terminal Machinery Co., 567 Atlantic Ave., Boston
Cassiere Machinery Co., 191 Eddy St., Providence
Melville L. Merrill Machinery, 410 Asylum St., Hartford
Standard Machinery & Supply Co., Boston
B. D. Brooks Co., Inc., 361 Atlantic Ave., Boston
The E. A. Eddy Machinery Co., Inc., 186 W Exchange St., Providence
Pratt & Whitney—Div. of Niles-Bement-Pond Co., Charter Oak Blvd., W Hartford, Conn.
Joseph Beal & Co., 465 Atlantic Ave., Boston
Associated Machinery Co., 142 Oliver St., Boston
Lee & Co., 410 Dorchester Ave., Boston

CHARLOTTE

Morris Speizman Co., Inc., 508 W Fifth St., Charlotte, N. C.
S. W. Harrington, P. O. Box 230, Ashville, N. C.

CHICAGO

General Equipment Engineering Co., 3530 W Pierce St., Milwaukee
Donberg & Danits, 400 S Clinton St., Chicago
Bansbach Machinery Co., 3911 W Madison St., Chicago
Gilmore Machinery Co., 30 S Clinton St., Chicago
The Fader Machinery Co., Inc., 23 N Jefferson St., Chicago
C. R. Daniels Machinery Co., 5135 N 32nd St., Milwaukee
John J. Normoyle Co., 607 Third Ave., Moline, Ill.

Rockford Machine Tool Co., 2500 Kishwaukee St., Rockford, Ill.
Willis Stutson Associates, 184 N Wacker Drive, Chicago
F. W. Burns Machinery Co., 1730 W North Ave., Milwaukee
Active Machine & Tool Co., 1036 W Lake St., Chicago
Iron & Steel Products Co., 135th & Brainard Ave., Chicago
Engineering Sales Co., 621 N Illinois St., Indianapolis, Ind.
Segal Machinery Co., 115 S Clinton St., Chicago
State Machine Tool Co., 1441 N Third St., Milwaukee
Production Service, 162 E Ontario St., Chicago
Long Sales Co., 6207 Seventh Ave., Kenosha, Wis.
J. Ralph Roach, 30 N LaSalle St., Chicago
C-Jay Machinery Co., 4456 W Madison St., Chicago
Davis & Murphy, 5252 Broadway, Chicago
W. J. Niblock Machinery Co., 1002 Johnson St., Elkhart, Ind.

CLEVELAND

Rank W. Andresen, Cleveland Railway Bldg., Cleveland
The Ajax Mfg. Co., 1441 Chardon Rd., Euclid, Ohio
The Cleveland Duplex Machinery Co., Inc., 626 Penton Bldg., Cleveland
Collier Co., 8015 Carnegie Ave., Cleveland
J. J. Dugan & Co., 7100 Euclid Bldg., Cleveland
Erco Distributing Co., 1625 Fifth St., Sandusky, Ohio
Harry N. Harvey, 47 Cherokee Trail, Willoughby, Ohio
Jeffery-Gilles Co., 610 Caxton Bldg., Cleveland
W. K. Stamets Co., 4026 Jenkins Arcade Bldg., Pittsburgh
Strong, Carlisle & Hammond Co., 1392 W Third St., Cleveland
Weaver Machinery Co., 1341 E 111 St., Cleveland
T. R. Wigglesworth Machinery Co., 1721 Superior Ave., Cleveland
Diamond Sales & Engineering Co., 12 N Third St., Columbus
Noll Equipment Co., 2476 E 13th St., Cleveland
L. & W. Machinery Co., 1699 W 25th St., Cleveland
Saunders Machinery Exchange, 2036 E 100th St., Cleveland
Balcher Machinery Sales, 1861 E 24th St., Cleveland
Garco Machinery Co., 3030 Euclid Ave., Cleveland
Herman Machinery Co., 11107 Earle Ave., Cleveland
Horvitz Merchandise Co., 1048 St. Clair Ave., Cleveland
International Steel Industries Co., 205 Marion Bldg., Cleveland
Lakeside Machinery Co., 1331 St. Clair Ave., Cleveland
Moslo Machinery Co., 2443 Prospect Ave., Cleveland
The Motch & Merryweather Machinery Co., 715 Penton Bldg., Cleveland
The Price-Thomas Co., 6928 Carnegie Ave., Cleveland
Adolph Friedman, 2909 Washington Blvd., Cleveland Hts., Ohio
A. E. S. Tools, Inc., 1948 Carter Road, Cleveland
K. E. Karlson & Son, 3435 Menlo Road, Shaker Heights
The C. H. Gosiger Machinery Co., 108 McDonough St., Dayton
Joseph T. Ferguson Associates, Inc., 1941 E Main St., Columbus
Rickey Machinery & Supply Co., 800 Wager Road, Rocky River 16, Ohio
Bardons & Oliver, Inc., 1133 W Ninth St., Cleveland
The Monarch Machine Tool Co., Sidney, Ohio

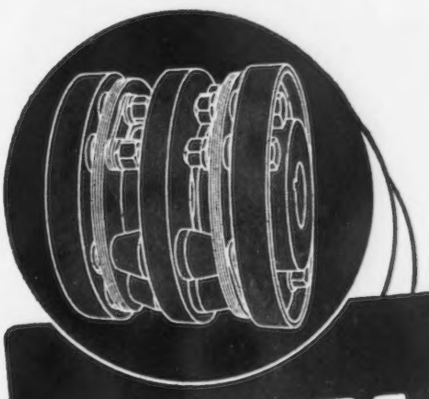
DALLAS

Pollard Distributing Co., 2307 Madera, Dallas, Tex.
Oliver H. Van Horn Co., Inc. of Texas, 1617 Main St., Fort Worth, Tex.
Marcuse Machinery Exchange, 2321 Prairie Ave., Fort Worth, Tex.
Joe Edelman Sales Co., 109 E Erwin St., Tyler, Tex.
Aero Sales Co., 2925 Commerce St., Dallas, Tex.
Hall Machine & Welding Co., 102-6 W Mermod, Carlsbad, N. Mex.

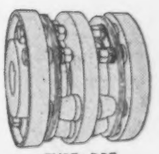
DENVER

Richard Ives Co., 661 W Colfax, Denver
Barnett Co., 3800 Wynkoop St., Denver
Bill Mesch Machinery Supply Co., 716 19th St., Denver
General Machinery & Supply Co., 635 Walnut St., Denver

THOMAS
Flexible COUPLINGS
....are specified by engineers, wherever 100% Operating Efficiency is demanded



THOMAS
Flexible COUPLINGS
provide for
Angular and Parallel Misalignment as well as Free End Float...
and Eliminate
BACKLASH, FRICTION, WEAR and CROSS-PULL
NO LUBRICATION IS REQUIRED!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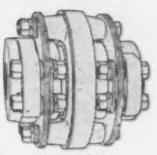
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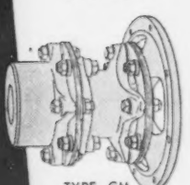
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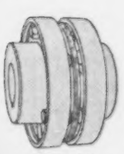
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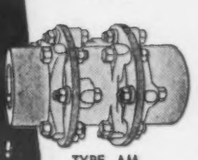
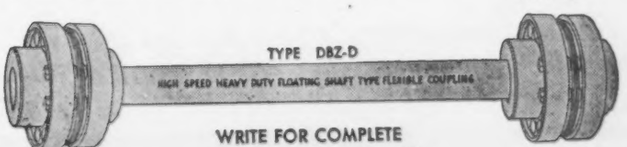

TYPE AM

TYPE SS

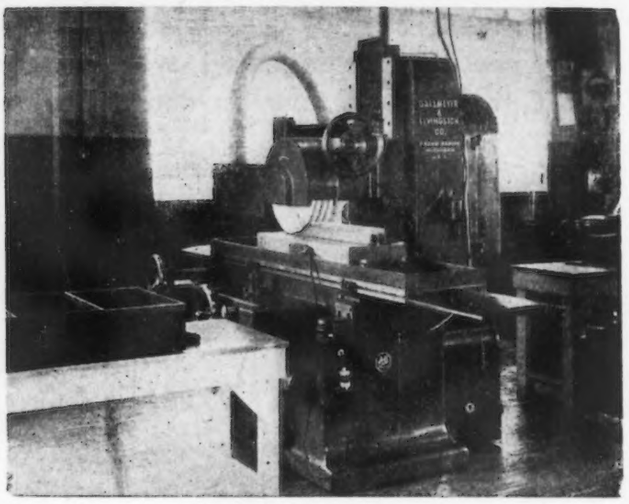
The Thomas All-Metal Coupling does not depend on springs, gears, rubber or grids to drive. All power is transmitted by direct pull.



WRITE FOR COMPLETE ENGINEERING CATALOG

THOMAS FLEXIBLE COUPLING CO.
WARREN, PENNSYLVANIA

GRAND RAPIDS



Here is a Grand Rapids No. 55 Motor Driven Precision Tool Room Type Hydraulic Feed Surface Grinder on a strictly production job in the plant of one of our large electrical manufacturers.

Note that the machine is equipped with special spindle carrying four 18" diameter grinding wheels.

Many of these machines are furnished with 20" diameter grinding wheels to permit the grinding of dies with guide pins in position.

THESE MACHINES FEATURE

ONE PIECE COLUMN AND BASE CASTING
PATENTED MOVEMENT OF WHEEL HEAD
BIJUR ONE SHOT LUBRICATING SYSTEM
TWO USABLE SPINDLE SPEEDS
PORTABLE MOTOR DRIVEN COOLANT SYSTEM
TABLE SPEEDS UP TO 125 F.P.M.

IF YOU ARE INTERESTED IN SURFACE GRINDERS WHICH COMBINE TOOL ROOM ACCURACY WITH PRODUCTION SPEEDS, SEND FOR BULLETIN GL101

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200 STRAIGHT AVE., S.W.
GRAND RAPIDS 4 MICHIGAN

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Mountain Equipment Co., P.O. Box 1048, Albuquerque, N. M.
E. F. Gobatti Engineering, 2301 N. Grand Ave., Pueblo, Colo.
S & M Supply Co., Box 247, Grand Junction, Colo.
Great Western Pipe & Supply Co., 1324 13th St., Denver
Aircraft & Airport Equip. Co., 2705 High St., Denver
Morse Bros Machine Co., 2900 Broadway, Denver

DETROIT

Bradley Machinery Co., 211 Jos. Campau, Detroit
Marquette Machinery Co., 18423 Greenlawn Ave., Detroit
Empire Machinery Exchange, 12207 Hamilton Ave., Detroit
Burleigh-Stocker Machinery Co., 1914 Fisher Bldg., Detroit
E. R. Hagen, 156 Louise Ave., Detroit
Miles Machinery Co., 926 S Niagara St., Saginaw, Mich.
Lakeshore Machinery & Supply Co., 400 W Laketon Ave., Muskegon, Mich.
Reliable Machine Rebuilders, 8700 Brandt St., Dearborn, Mich.
Monarch Engineering Co., 1491 E Eight Mile Road, Hazel Park, Mich.
Standard Machinery Co., 351 Indiana Ave., NW, Grand Rapids, Mich.
Globe Trading Co., 920 W Lafayette Blvd., Detroit
H. C. Slonaker, 1719 Dime Bldg., Detroit
Kennametal, Inc., 5531 Woodward Ave., Detroit
Charles R. Mueller & Sons, Inc., 531 E Lafayette, Detroit
H. J. Camden, 825 Hibbard Ave., Jackson, Mich.
E. E. Wood Machinery Co., 2832 E Grand Blvd., Detroit, Mich.

HOUSTON

Engineering Sales Co., 112 Portwood St., Houston, Tex.
Chickering Tool & Equipment Co., 5001 Navigation Blvd., Houston, Tex.
Derby-Gibson Machinery Co., 430 Western Union Bldg., Houston, Tex.
Steel & Machine Tool Sales Co., 6416 Navigation Blvd., Houston
Huge-Fayle Co., 1011 Caroline St., Houston
Machinery Tool & Engineering Co., 502 Stewart Bldg., Houston
Peden Iron & Steel Co., 700 N. San Jacinto, Houston
Preston Machine Tool Sales Co., 724 M & M Bldg., Houston
Machinery Sales & Engineering Service, 1015 Second National Bank Bldg., Houston
Wessendorf, Nelms & Co., 320 Franklin Ave., Houston

KANSAS CITY

Eichman Machinery Co., 235 W Eighth St., Kansas City
English Bros. Machinery Co., 410 W Fifth St., Kansas City

MINNEAPOLIS

Charles W. Stone Co., 1019 Marquette Ave., Minneapolis
The John C. Eide Co., 200 Washington Ave., Minneapolis
Machinery Exchange Market, 254 First Ave., N, Minneapolis
Northern Machinery & Supply Co., 818 Lumber Exchange Bldg., Minneapolis
The Satterlee Co., 118 Washington Ave., Minneapolis
Sales Service Machine Tool Co., 2426 University Ave., St. Paul
Machinery Equipment Co., 1300 Washington Ave., Minneapolis
E. J. Koblas or United Hardware Distributing Co., 801 Foshay Tower, Minneapolis
E. E. Taylor, 1641 Dayton Ave., St. Paul
Newberry Machine Tool Co., 1549 Ashland Ave., St. Paul

NASHVILLE

Strable-Johnson Supply Co., 1300 Broad St., Chattanooga, Tenn.
Hays Machine Tool Co., 269 S Front St., Memphis, Tenn.
Bert L. Sylar & Son, 105 Belvoir Ave., Chattanooga, Tenn.
Duncan Combs Co., 209 Eighth Ave. N, Nashville, Tenn.
W. C. Pitts & Son, 154 N Front St., Memphis, Tenn.
Tennessee Machinery Co., 121-23 Third Ave., Nashville, Tenn.
Hawkins Bros., 2823 Sharondale Drive, Nashville, Tenn.

NEWS OF INDUSTRY

NEW ORLEANS

Dixie Mill Supply Co., Inc., 901 Tchoupitoulas St., New Orleans
Stauss & Haas, Inc., 524 Camp St., New Orleans
Southern States Equipment Co., 425 Celeste St., New Orleans
Oliver H. Van Horn Co., Inc., 1742 St. Charles Ave., New Orleans
Murray-Baker-Frederic, Inc., 628 South Peters St., New Orleans
Frederic & Baker, 825 Ardis Bldg., Shreveport, La., and 725 Canal Bldg., New Orleans

NEW YORK

Failor Strafer Machinery Co., 22 Pollock Ave., Jersey City
Bennett Machinery Co., 30 Church St., New York
Chas. L. Wachter Engineers, 55 W 42nd St., New York
Royal Machinery Exchange, 401 Broome St., New York
Anthony M. Meyerstein, Inc., 66 Court St., Brooklyn
Ralph Hochman & Co., 52 Edison Place, Newark, N. J.
Neafie-Goodrich & Co., 272 N Broad St., Elizabeth, N. J.
Hubert C. Fagan, 111 92nd St., Brooklyn
John P. Kelly, 224 Tuscarora Rd., Buffalo
Everett J. Jewett, Watchung, N. J.
Industrial Plants Corp., 90 W Broadway, New York
The Watson-Stillman Co., Roselle, N. J.
Syracuse Supply Co., 314 W Fayette St., Syracuse, N. Y.
C. H. Briggs Machine Tool Co., Inc., Onondaga Hotel Bldg., Syracuse, N. Y.
R. V. Osmun Co., 406 Bloomfield Ave., Bloomfield, N. J.
Industrial & Marine Service Co., 30 Church St., New York
Syracuse Surplus Co., Inc., 107 W Hiawatha Blvd., Syracuse, N. Y.
Falk Mill Supply Co., Inc., 18 Ward St., Rochester, N. Y.
Globe Machinery Co., 214 Centre St., New York
Rudel Machinery Co., Inc., 100 E 42nd St., New York
National Machine Tool Bureau, 129 N Walnut St., East Orange, N. J.
Amer-Ind, Inc., 420 Madison Ave., New York
Victory Cable Co., 217 E Fifth St., New York
National Machinery Exchange, 128 Mott St., New York
R. Greenberg, 15 Park Row, New York
Harrington-Wilson-Brown Co., 405 Lexington Ave., New York
F. B. Cutter Co., 50 Church St., New York
John T. Hopper, 140 75th St., Brooklyn
G. & S. Sales Co., 1259 State St., Schenectady
Vandyck Churchill Co., 114 Liberty St., New York
Welding Engineering Sales Corp., 110 E. 42nd St., New York
Associated Woodworking Machinery Corp., 23 Howard St., New York
Brooklyn Tool Supply Co., 714 Bedford Ave., Brooklyn
Chamberlain Machine Tool Co., 210 Main St., Hackensack, N. J.
Robert J. Hyder Mchy. & Tool Co., 88 Exchange St., Rochester, N. Y.
Herbert Hall Co., 1060 Broad St., Newark, N. J.
American Air Compressor Corp., Dell Ave. & 48th St., North Bergen, N. J.
Capitol Machinery Corp., 253 Centre St., New York
Hartfield-Healy Supply Co., Inc., 190 Main St., Buffalo
William J. Lohn, Inc., 203 Centre St., New York
State Mill Supply Co., 98 Park Place, New York
F. S. Strite, Consulting Engr., 601 W 144th St., New York
Sun Machinery Co., 36 Van Vechten St., Newark, N. J.
Surplus & Salvage Co., Inc., 109 N Main St., Jamestown, N. Y.
Acme Machinery Co., 40 Elizabeth St., New York
Connolly Merchandising Inc., Empire State Bldg., New York
E. J. Sales Co., 1457 Broadway, New York
E. B. Packard Co., Inc., 114 Liberty St., New York
Simmons Machine Tool Corp., North Broadway, Albany
F. N. Potter, 4 Manchester Road, Tuckahoe, N. Y.
Asher Machinery Co., 126 S 14th St., Newark N. J.
F. Howarth & Son, 517 Market St., Newark, N. J.
Frederick G. Schranz, 90 W Broadway, New York

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Machine Tool & Supply Co., 215 E. First St., Tulsa, Okla.
Marshall Supply & Equipment Co., 109 W First St., Tulsa, Okla.
J. R. Lawrence, Manufacturers' Agent, 702 Ritz Bldg., Tulsa, Okla.
Tulsoma Supply & Equipment Co., 224 E Fourth, Tulsa, Okla.
Hart Industrial Supply Co., 409 W California, Oklahoma City, Okla.
Berry Equipment Co., 1621 E Broadway, Muskogee, Okla.

PHILADELPHIA

Delta Equipment Co., 148 N Third St., Philadelphia
H. Loeb & Son, 4643 Lancaster Ave., Philadelphia
General Machinery & Equipment Co., 180 S 15th St., Harrisburg, Pa.
Albert Hepworth, 2311 N 16th St., Philadelphia
Delaware Equipment Co., 124 N Third St., Philadelphia
Charles V. Fish, 501 Commonwealth Bldg., Allentown, Pa.
Hahn & Brandt Machinery Co., 465 N Fifth St., Philadelphia
Alex Mushkin, State Highway, Moosic, Pa.
York Penn Machinery Co., 28 N Penn St.,
Clarence J. O'Brien, 1032 Commercial Trust Bldg., Philadelphia
Commercial Electric Motor Co., 116 N Third St., Philadelphia
The O'Brien Machinery Co., 113 N Third St., Philadelphia
Kamis Engineering Co., Third & Moore Sts., Philadelphia
Ajax Machinery Co., 138 N Third St., Philadelphia
Ace Equipment & Salvage Co., 141 N Third St., Philadelphia
Machinery & Metals Co., Commercial Trust Bldg., Philadelphia
Joseph Hyman & Sons, Tioga, Livingston & Almond Sts., Philadelphia
Mickleburgh Machinery Co., 117 N Fourth St., Philadelphia
Hochman Machinery Co., 720 Chestnut St., Philadelphia
The Scranton Supply & Machinery Co., Inc., 634 Wyoming Ave., Scranton, Pa.
Swind Machinery Co., Broad St. Station Bldg., Philadelphia
L. Albert & Son, 836 Whitehead Rd., Trenton, N. J.
L. M. Gilbert Co., 516 Drexel Bldg., Philadelphia
Mfr's. Sales & Equip. Co., 18 W Chelten Ave., Philadelphia
S. Mann Co., 1630 Vine St., Philadelphia
Samuel R. Rosenberg, 648 S Seventh St., Reading, Pa.
James A. Condon, 1710-14 N Fifth St., Philadelphia
G. Raymond Koehler, 1733 N Fifth St., Philadelphia
Phila. Transformer Co., 2829 Cedar St., Philadelphia
Adelphia Equipment, 341 N Third St., Philadelphia

PORTLAND

The Portland Machinery Co., 208 S W First Ave., Portland, Ore.
Feenaughty Machinery Co., 112 S E Belmont St., Portland, Ore.
Westland Equipment Co., 660 N Tillamook, Portland, Ore.
Star Machinery Co., 801 S W Front Ave., Portland, Ore.
Carlson Hatton & Hay, Inc., 94 E 10th Ave., Eugene, Ore.
J. E. Haseltine & Co., 115 S W Second Ave., Portland, Ore.
Clyde Equipment Co., 1631 N W Thurman St., Portland, Ore.
Schnitzer & Wolf Machinery Co., 900 S W First Ave., Portland, Ore.
Mid-Columbia Supply & Equipment, E Columbia River Highway, The Dalles, Ore.
Clyde P. Carroll, 121 SW First Ave., Portland, Ore.
Tom M. Anderson Co., 1000 W Eighth St., Vancouver, Wash.
Jack Helser Machinery Co., 235 NW Second Ave., Portland, Ore.
George E. Zweifel & Co., 103 S W Front Ave., Portland, Ore.
Hunters Creek Electric Co., Gold Beach, Ore.
Balzer Machinery Co., 2136 S E Eighth Ave., Portland, Ore.

RICHMOND

U. S. Industries, Inc., 1025-15th St., Washington, D. C.

Anthony J. Daukas, 76 Chinquapin Village, Alexandria, Va.
Machine Steel Products Corp., 1525 I St., Washington 5, D. C.
Carey Machinery & Supply Co., Inc., 119 E Lombard St., Baltimore, Md.
Blue Ridge Hardware & Supply Co., Inc., Bassett, Va.
The Belmar Co., 221 22nd St., Huntington, W. Va.
Guyan Machinery Co., Logan, W. Va.
William S. McCormick, 1611 Park Road, NW, Washington, D. C.
Kirk Machinery Corp., 1420 New York Ave., Washington, D. C.

ST. LOUIS

Henry Fligeltaub Co., 1022 Division St., Evansville, Ind.
K. P. Wesseling Co., 1221 Locust St., St. Louis
E. L. Klauber Machinery Co., 3221 Olive St., St. Louis
Clements Welding Supply Co., 709 Academy Ave., St. Louis

SALT LAKE CITY

The Mine & Smelter Supply Co., 121 W. Second South, Salt Lake City
Western Salvage & Supply Co., 220 W South Temple St., Salt Lake City
The Salt Lake Hardware Co., 105 N Third West, Salt Lake City
Olsen Mfg. Co., 4000 Warm Springs, Boise, Idaho
Bogue Supply Co., 741 W Fourth S. St., Salt Lake City

SAN ANTONIO

Stone Machinery Co., 320 Brooklyn Ave., San Antonio, Tex.
R. L. Bennett & Sons, 802 Sequin St., San Antonio, Tex.
J. H. Wise, 701 Milam Bldg., San Antonio, Tex.
J. B. Love Equipment Co., 907 Broadway, San Antonio, Tex.
Pipkin Motors, Inc., 927 SE Elizabeth St., Brownsville, Tex.
Tri-Pak Machinery Service, P. O. Box 1228, Harlingen, Tex.
Laundry Equipment Co., 226 E Commerce St., San Antonio, Tex.
Procter Sales Co., Transit Tower, San Antonio, Tex.
Waldo E. Bugbee, 1802 Alamo National Bldg., San Antonio, Tex.
San Antonio Machine & Supply Co., P. O. Box 660, San Antonio, Tex.

SEATTLE

Buckner-Weatherby Co., Inc., 1743 First Ave. South, Seattle
Western Machinery Exchange, Aberdeen, Wash.
Superior Steel Co., 1117 Third Ave., Seattle
Kinnane Machinery Co., 2727 First Ave. South, Seattle
Pickering Machinery Co., 2729 First Ave. South, Seattle
Perine Machinery & Supply Co., Inc., 1921 First Ave. South, Seattle
Dawson Machinery Co., 2737 First Ave. South, Seattle
Star Machinery Co., 1741 First Ave. South, Seattle
Sundfelt Equipment Co., 3422 First Ave. South, Seattle
Hallidie Machinery Co., 2245 First Ave. South, Seattle

SPOKANE

W. R. Matthews Machinery & Tool Supply Co., W 421 Second Ave., Spokane
American Machine Works, 1027 W Broadway, Spokane
Fred M. Viles & Co., Inc., E 124 Trent Ave., Spokane
Turner Bros., 113 S Fourth Ave., Yakima, Wash.
Modern Machinery Co., Inc., N 2417 Division, Spokane

Ford Plant Building

Dearborn Mich.

• • • **Construction of a new sales** distribution and parts branch building for Ford Motor Co. at Denver, Colo. is now under way, the plant being one of several in the company's $200 million expansion program.

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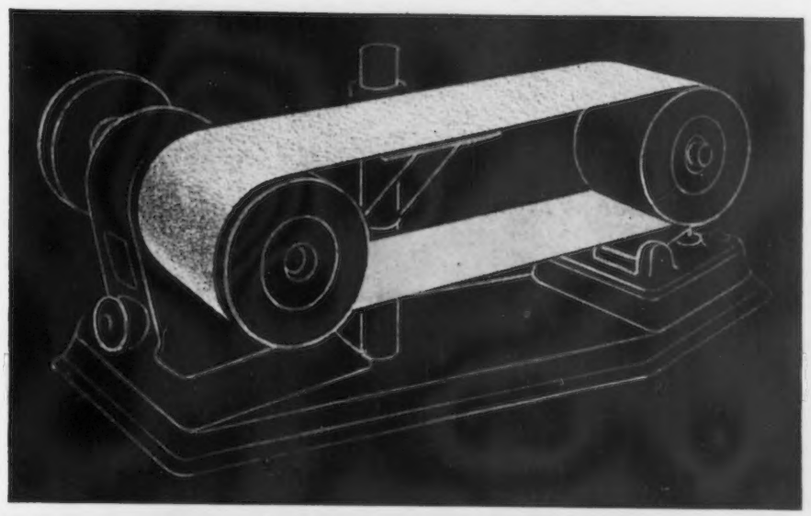

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December Pig Iron In Canada Gains Little

Toronto

• • • **Production** of pig iron in Canada showed only a minor gain in December when output amounted to 125,225 net tons, compared with 134,651 tons in November and 139,152 tons in December a year ago. In December production held at a rate of 58.5 pct of total rated capacity against 58.3 pct in the month immediately preceding. Output for the month under review included 109,327 tons of basic iron of which 106,714 tons were for further use of producing companies and 2613 tons for sale; 15,222 tons of foundry iron all for sale and 10,676 tons of malleable iron all for sale. Blast furnace charges in the month included 238,311 tons of iron ore, 23,205 tons of mill cinder, scale, sinter, etc. and 3206 tons of scrap iron and steel.

There was no change in the number of furnaces blowing in December from the previous month and at the close of the month eight stacks were in blast and six blown out.

For the full year 1945 pig iron production totaled 1,777,958 net tons, which compares with 1,852,628 tons in 1944 and 1,758,265 tons in 1943. Production in 1945 included 1,421,243 tons of basic iron, of which 85,395 tons were for sale and the balance for further use of producing companies; 198,293 tons of foundry iron and 158,422 tons of malleable iron, all the latter two grades being for sale. During the year blast furnace charges included 3,151,366 tons of iron ore, 267,998 tons of mill cinder, scale, sinter, etc. and 73,610 tons of scrap iron and steel.

For December, output of ferroalloys amounted to 15,456 net tons, compared with 13,360 tons in the previous month and with 12,391 tons in December 1944. In the month under review the following alloys were produced: Ferrosilicon, silicomanganese, ferromanganese, ferrochrome, chrom-x and ferrophosphorus. For the 12 months of 1945 production of ferroalloys totaled 186,978 net tons compared with 182,428 tons in 1944 and 218,687 tons in 1943.

Following are comparative

monthly production figures for pig iron and ferroalloys during 1945, in net tons:

	Pig Iron	Ferroalloys
January	155,968	12,130
February	149,487	13,402
March	165,817	16,434
April	156,070	18,350
May	155,574	19,883
June	159,046	18,473
July	150,387	15,750
August	139,812	15,668
September	135,227	13,517
October	140,693	14,555
November	134,651	13,360
December	135,225	15,456
Total	1,777,958	186,978

Canada's 1945 Steel Output Declines From Peak Levels in 1944

Toronto

• • • **Canadian production** of steel ingots and castings for December totaled 219,281 net tons which was 72.6 pct of rated capacity and compares with 207,981 tons or 68.8 pct in November and 243,482 tons in December 1944. Output in the month under review included 212,775 tons of steel ingots and 6506 tons of steel castings. Charges to steel furnaces in December included 109,163 tons of pig iron; 64,045 tons of scrap of consumers own make and 65,662 tons of purchased scrap.

For the full year 1945 output of steel ingots and castings totaled 2,881,323 net tons compared with 3,024,410 tons in 1944 and 2,996,978 tnos in 1943. For the year under review, production included 2,747,206 tons of steel ingots and 134,117 tons of steel castings. Charges to steel furnaces throughout the year included 1,397,631 tons of pig iron; 925,482 tons of scrap of consumers own make and 850,337 tons of purchased scrap.

	Steel Ingots	Steel Castings
January	253,674	15,048
February	235,602	14,862
March	261,524	15,937
April	260,144	14,069
May	254,629	13,014
June	244,792	12,323
July	220,379	8,872
August	214,930	9,998
September	189,640	8,868
October	198,185	7,661
November	200,932	7,049
December	212,775	6,506
Total	2,747,206	134,117

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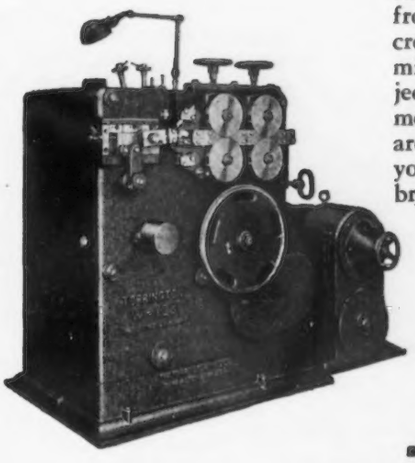

Speed and accuracy are fundamental qualities of Torrington Spring Coilers. Fourteen sturdily constructed models coil wire diameters from .003" to .750". Accuracy increases high production rates by minimizing hand inspection and rejections. Torsion and other attachments for special types of springs are available. A brief description of your spring coiling problems will bring our prompt, detailed reply.

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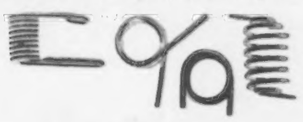

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CONCO ENGINEERING WORKS, 15 Grove St., MENDOTA, ILL.

Reports on Changes in Naval Warfare

Washington

• • • **The enormous expansion** of the wartime Navy to 50,759 vessels on July 1, 1945, displacing 13,500,000 tons, from 1099 vessels displacing 1,900,000 tons on July 1, 1940, when Congress authorized a "two ocean Navy" was assured, said Secretary of the Navy James Forrestal in his annual report for 1945, by the expanded capacity of industry and of Navy and private yards. Showing where large tonnages of steel and great quantities of machinery went, the number of major combatant ships included in these totals increased in the five-year period to 1171 ships totaling more than 4,400,000 tons from 383 ships totaling 1,300,000 tons. Equally telling in terms of shores invaded and enemy ships sunk, the report said, was the research and engineering genius which put more speed and firepower into the traditional types and developed types never before seen — destroyer escorts, escort carriers and a whole new fleet of amphibious force vessels ranging from floating tanks and seagoing LST's and LSD's.

Of all the technical developments for the modern fleet, the report pointed out, electronics perhaps had the most startling growth. Including procurement for the Bureau of Aeronautics, the other services and lend-lease, the Bureau of Ships awarded $4.4 billion in contracts for radar, radio and other electronic equipment in five years ending with June 1945. The fact that $800 million of this total was eliminated through cancellations and adjustments, the report said, actually attested to the rapidity of development; many of the cutbacks were offset later by awards for equipment of improved design. Reflecting the telescoping of a generation of research into a few wartime years, radar deliveries increased steadily, although radio deliveries declined during the last year. Of the $3.6 billion of net awards for electronics, all but $1 billion had been delivered at the end of June 1945.

Of the $90.3 billion expenditures during the July 1, 1940—Aug. 31, 1945 period, $30.6 billion was for ships; $13.8 billion for ordnance; $15.7 billion for aeronautics; $7 billion for yards and docks; $21.1 billion for supplies and accounts and $6.3 billion for all other.

Procurement by the Ordnance Bureau reflected the constantly changing character of naval warfare. The Navy's part in amphibious operations called for larger quantities of underwater demolition equipment for use on enemy inshore defenses, and of bombardment ammunition and barrage rockets for reducing shore installations. Dependence upon naval bombardment is illustrated by the firing of 36,000 tons at Guam, Saipan and Tinian in the Mariannas, 7000 tons at Peleliu in the Palaus, 16,000 tons at Iwo Jima in the Bonins, and almost 50,000 tons at Okinawa in the Ryukyus. Reduction in the number of large enemy naval vessels, the report said, was reflected in lessened procurement of armor-piercing ammunition. As the fleet approached the islands of Japan, the Bureau had to meet new demands for both offensive and defensive weapons: The latest type mines to block enemy harbors and shipping lanes, additional 40 mm guns, new radar-controlled blind-firing directors. Most spectacular of all, however, the report stated, was the proximity fuze to meet the threat of enemy air attack and "Kamikaze" suicide planes.

Early in the war program, the Bureau of Yards & Docks originated a standard steel cell, or pontoon, with a wide variety of uses. Pontoons of this type could be assembled in a few hours into such vital equipment as barges, causeways, piers, floating dry docks, floating cranes and "rhine ferries." Perhaps the most novel use for these pontoons was to move a large floating dry dock on its side through the Panama Canal. Including 148,000 delivered in the first six months of 1945, deliveries of pontoons reached 520,000 with a total surface area equal to 400 football fields. As many as 45,000 pontoons were used in a single landing operation.

The Naval Construction Battalions—Seabees—were the one major new ground organization produced by World War II. The bulk of the battalions served in the Pacific, but the Seabees took part in every major amphibious operation American forces launched in the Asiatic and European Theaters.

Typical of their work was the 24-hr-a-day assignment to build up

Okinawa as a powerful air base from which to smash at Japan. This was a direct continuation of the work of other battalions on islands which served as stepping stones to the final battle front. Landing with the assault forces on Saipan, Tinian and Guam, they brought in equipment and supplies over pontoon causeways and built up the airfields. They "paved" the beaches at Iwo Jima to bring in everything required to make the assault on Okinawa.

o o o

Output Gains in Farm Machinery Inadequate To Match Home Demand

Washington

• • • **Exceeding the 1944** output by about $20 million, production of farm machinery in 1945 totaled $663,484,196, according to CPA. Export shipments in the last half of 1945 amounted to 12 pct of the total production, which was approximately the prewar export rate.

It was pointed out by CPA that the high 1945 production rate included an unusually large proportion of production for repair parts and attachments, made necessary by the low output of farm machinery during the early war years. These items accounted for $240,060,434 of the total or more than one-third and inflated the production figure to about $200 million above the average annual prewar total. The trend in the latter half of 1945 was towards more machinery production and a decline in repair parts to $85,707,844 from $98,996,356 in the corresponding period of 1944.

CPA emphasized that the increase in production of new farm machinery and equipment was still inadequate. Although the industry plans substantial increases in production, CPA said, the accomplishment of these goals depends in part on the improvement of the current labor situation and the production of adequate supplies of component parts. Lagging production in castings, also attributed to a manpower shortage, is a stumbling block in obtaining adequate parts deliveries.

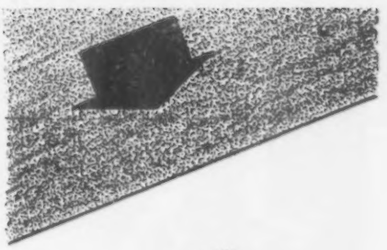
Offers Engines for Sale

Oklahoma City, Okla.

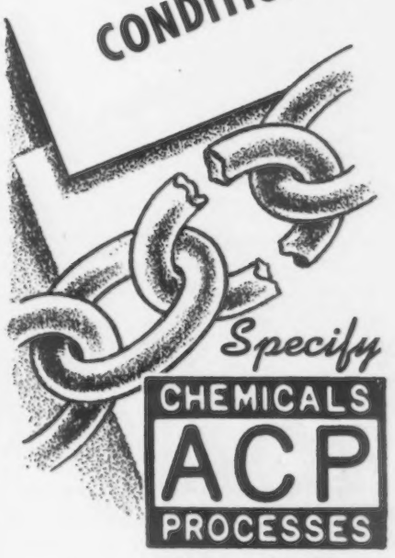
• • • **A large quantity** of 8-cylinder, L-head industrial engines, together with couplings and mufflers, are being offered for sale by the regional office of the War Assets Corp., subsidiary of the Reconstruction Finance Corp. The property, located at the Modification Center at Tulsa, Okla., also includes a number of centrifugal pumps. Most of the items offered for sale are on a price-tag basis, but the centrifugal pumps will be sold through sealed bids which will be received until Feb. 18 at the regional office, where arrangements for inspection of the property may be made.

Farm Machinery Production
(Dollar Value)

	PRODUCTION	
	July 1, 1944 to December 31, 1944	January 1, 1945 to December 31, 1945
Planting, seeding and fertilizing	$ 8,992,715	$17,585,491
Plows and listers	7,691,247	18,358,784
Harrows, rollers, pulverizers, stalk cutters	5,528,119	12,098,835
Cultivators and weeders	7,176,680	18,617,647
Sprayers, dusters, orchard heaters	3,699,497	12,018,296
Harvesting machinery	24,274,631	55,263,515
Haying machinery	11,580,208	23,799,894
Machinery for preparing crops for market	5,555,971	10,076,109
Farm elevators and blowers	1,360,025	3,944,195
Tractors, wheel type	77,755,825	158,367,855
Garden tractors	586,250	2,122,250
Industrial tractors	4,420,000	10,383,000
Farm wagons, gears, trucks	1,801,579	3,092,472
Domestic water systems	9,447,028	24,078,414
Farm pumps and windmills	1,720,178	3,587,173
Irrigation equipment	2,808,372	9,495,595
Dairy farm machinery and equipment	8,275,204	17,249,861
Barn and barnyard equipment	3,049,567	6,093,422
Farm poultry equipment	5,258,222	9,855,149
Miscellaneous farm equipment	3,745,556	7,335,805
Attachments	16,850,174	46,943,831
Repairs	98,996,356	193,116,603
Total all groups	$310,573,404	$663,484,916



ENDURING PAINT FINISHES DEMAND PROPER SURFACE CONDITIONING



AND BE SURE!

ACP has developed metal cleaning, rust removing and metal conditioning Chemicals and Processes which assure enduring finishes.

Our Technical Department will gladly assist in adapting them to your manufacturing needs. *Write Dept. E-2.*

MANUFACTURERS OF INHIBITORS AND METAL WORKING CHEMICALS

AMERICAN CHEMICAL PAINT CO.
AMBLER ACP PENNA.

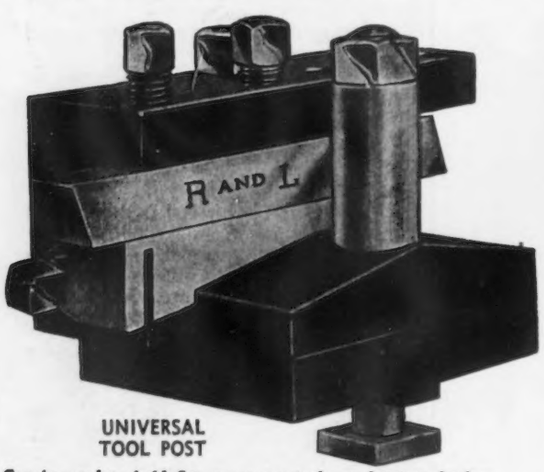
RE-TOOL *with* R AND L TOOLS

R and L TURNING TOOL

Shown set up for drilling, turning and burnishing. The Tantalum Carbide Backrest may be removed and the new Roller Backrest, shown below, substituted.

ROLLER BACKREST

Made in five sizes to fit the five sizes of R and L Turning Tools. Easily changed for either right or left hand turning.



UNIVERSAL TOOL POST

Can be used to hold flat or square tools on front or back cross slide with the spindle running either direction.

Turret lathes, automatics and other machine tools are made more adaptable for a greater variety of metal-cutting operations — and more productive — *with R and L Turning Tools, Universal Tool Posts, Tap and Die Holders and Roller Backrests.*

When reconverting your machine tools to civilian production — get in touch with R and L for re-tooling suggestions. *Write Today* for the R and L booklet.

R AND L TOOLS
1825 BRISTOL STREET
NICETOWN, PHILADELPHIA 40, PA.

TAP AND DIE HOLDER

New design eliminates spring plungers and small screws. Engaging teeth separate fully—and instantly—when released, eliminating wear.